

AN *Gal 7 N d*
ESSAY
TOWARDS A
Complete New System
OF
MIDWIFRY,

THEORETICAL and PRACTICAL.

TOGETHER WITH
The Descriptions, Causes, and Methods of Removing,
or Relieving the Disorders peculiar to Pregnant and Lying-in
WOMEN, and New-born INFANTS.

Interspersed with
Several New IMPROVEMENTS;

Whereby WOMEN may be delivered, in the most
dangerous Cases, with more Ease, Safety, and Expedition, than
by any other Method heretofore practised: Part of which has
been laid before the ROYAL SOCIETY at London, and the
MEDICAL SOCIETY at Edinburgh; after having been perused
by Many of the most Eminent of their Profession, both in Great
Britain and Ireland; by whom they were greatly approved of.

All Drawn up and Illustrated with Several Curious OBSERVATIONS,
and Eighteen COPPER-PLATES.

IN FOUR PARTS.

By JOHN BURTON, M.D. *R*

— Si quid novisti rectius istis,
Candidus imperti; si non, his utere mecum.

H. O. R.

L O N D O N:

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ESTABLISHED 1847

THE
PRESIDENTS AND MEMBERS
OF THE
ROYAL SOCIETY OF LONDON

THEORETICAL AND PRACTICAL
MEDICAL
THE DESCRIPTION OF THE
OF REMOVING
WOMEN
MAYNIN

A
The chief motive for the
The New Improvement
The Foundation of Your
The Society may be delivered in the most
dangerous and difficult manner, and the
by any other method, and the Society has
been in the most difficult manner, and the
Medical Society at London, and the
by means of the most difficult manner, and the
particularity, that the Society has
The Society has been in the most difficult
Mankind are to be preserved, I take
the Liberty, therefore, to publish
the following Essay under Your Pro-
tection, which I am the more in-
duced to do, as some of the
provements and new Discoveries in
the

TO THE
Presidents and Members
 OF THE
ROYAL SOCIETY at London,

And of the

MEDICAL SOCIETY at Edinburgh.

GENTLEMEN,

AS the chief Motive for the
 very Foundation of Your se-
 veral SOCIETIES was, to pro-
 pagate all beneficial Knowledge to
 the World in general; but more
 particularly that Branch of it,
 whereby the Lives and Healths of
 Mankind are to be preserved, I take
 the Liberty, therefore, to publish
 the following *Essay* under Your Pro-
 tection; which I am the more in-
 duced to do, as some of the Im-
 provements and new Discoveries in

the Practice of *Midwifry* therein mentioned, have already been laid before Your respective SOCIETIES, after having been perused by many of the most Eminent in their Profession, in this Kingdom and *Ireland*, who have unanimously approved of them.

THE Approbation of different SOCIETIES (the most remarkable in the World for their Learning and superior Skill in the Practice of every Branch of their respective Professions) is no less a Satisfaction, than an Honour done me: as it will certainly be a Means of depriving Those who abound with *Ill-nature*, *Envy*, and *Detraction*, of their most poignant Pleasure: And at the same Time will silence, or stop the Mouths of the most ignorant Part of Mankind, who will always find Fault with what they do not understand; when the only Defect is in their own Brains.

As

D E D I C A T I O N

As I have not the Honour to be personally known, except to very Few of You, it cannot be supposed, that Your Approbation of the *Improvements* laid before You, could proceed from any other Motive, than from Your generous Concern for the Welfare of Mankind, and from Your humane Disposition to forward whatever may contribute towards the Advancement of any Branch of Medicinal Knowledge.

THAT Your several Societies may still improve in every Branch of Learning, and ever be an Honour to the British Nation, is the hearty Prayer of,

G E N T L E M E N,

Your most Devoted and

Most Obligated Humble Servant,

York, May 29.

John Burton

And I have not the Honour to be
 personally known, except to a
 few of you, it cannot be suppo-
 sed, that Your Application of the
 Improvements said before you, T H E
 could proceed from any other
 than the most genuine and
 certain for the Welfare of Mankind,
 and from Your humane Disposition
 to the Improvement of human Scie-
 nce, and Reason will always be shown
 to be the only true and lasting
 Branch of knowledge, which is
 the answer to Nature, and in this State
 of things as it is, is not equal in all Perso-
 ns, and there are new Opinions, habits,
 of I call Improvements, daily made, in
 your own Nation: Facts, which respecting
 the most important things; but Reason or
 Conscience shew from them, frequently alter
 with the Times.
 I said indeed, it may be said to be (in Com-
 parison with other Branches of Medical
 Knowledge) that Men generally either
 the Trouble to study Midwifery, or to write
 upon it; and indeed they did begin like most
 Writers upon new Subjects, they not only left
 a great deal of Room for their Successors to
 make considerable Additions, but they also in-
 creased the Bulk of their Books, by inserting
 many

THE
PREFACE.

AS the Imperfection of human Sense and Reason will always occasion a Variety of Opinions of Things, and in the Consequences which Men draw from the Appearances in Nature: And as this State (imperfect as it is) is not equal in all Persons, no Wonder there are new Opinions started, and new Improvements daily made in most Arts and Sciences: Facts justly represented are real permanent Things; but Reasons or Conclusions drawn from them, frequently alter with the Times.

Late, indeed, it may be said to be (in Comparison with other Branches of Medical Knowledge) before Men gave themselves either the Trouble to study Midwifery, or to write upon it; and when they did begin, like most Writers upon new Subjects, they not only left a great deal of Room for their Successors to make considerable Additions, but they also increased the Bulk of their Books, by inserting

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many Things no way necessary for instructing others, in either the Theory, or Practice of Midwifry.

Whoever will look into the oldest Writers in Midwifry, will soon be convinced of the Truth of what I say; nay, let him go no farther than the last Century, when he will find MAURICEAU to be the first Author worth Reading: He gave us both his Theory, Practice, and Observations, which were first published in 1668; but Discoveries and Improvements made in Anatomy and Philosophy, since that Time, have almost rendered the First Part, at present, useless; and Observations from Experience have made considerable Additions to the Latter.

Dr. DEVENTER, a Dutch Physician, published his *Ars Obstetricandi* in 1700, and is the next Author worthy of Notice: He has gone nearly upon the same Plan as MAURICEAU, as to Theory and Practice, but does not give us his Observations or Cases at large. He is the first Author that takes Notice of the Obliquity of the Womb, as being an Obstacle to a speedy and safe Delivery. As this was a new Thing, his Book was scarce published, before Numbers of Pretenders to Midwifry exclaimed against him with great Fury, without any other Reason, than that he had been more curious in searching into Nature, and knew more than themselves. I cannot avoid being surprised, I own, to find
Some

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some Moderns also, who (because they may never have met with such Cases; which is possible; or if they did, have not been so careful to take Notice of them) will yet persist in contradicting him; although without the least Foundation, as I am positive of, because I have met with several Instances of this Kind, and have convinced others upon the Spot: Two of the most remarkable I have mentioned in the Sequel.

The Observations made by LA MOTTE, from 1684 to 1720, with his Reflections upon the Cases, composed the next Book worthy Notice; but the same Defect is in him and DEVENTER, as is in MAURICEAU. After this Time, Numbers of Books upon this Subject were published, both in these and foreign Dominions; some of them being only Cases in Midwifry, as GIFFARD's, while other People only published Books or Pamphlets, from no other Motive than to let the World know there were such Persons in Being; against whom other Writers threw out their Squibs for the same Reason, the Public, in the mean Time, not reaping the least Benefit by the Contest.

As the Preservation of our Species so much depended upon the perfect Understanding of this Branch, both in bringing Children alive into the World, and in preserving the Lives of the Mothers; and as the Frequency of the (almost innumerable) Evils which daily beset the

the

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the Women and their Infants during Labour, by the Ignorance and Mismanagement of the Female-Midwives, first put Men upon applying their Study and Assistance; so they yet cry aloud for our farther Aid, because the same Reasons (I am sorry to say it) are still subsisting: For many of the Male-Practitioners are no less excusable than the Women, some of whom, observing the Reputation and Benefit which several judicious People obtained by their Practice in this Profession, are desirous of pushing themselves forwards in the same Way; and therefore, without considering the Education and Capacity requisite to qualify a Person to practise, they imagine nothing more is required but to hear a few Lectures, and to know the Use (or perhaps Abuse) of a few Instruments, with a Copy of some Old-Wives Receipts, with which they think themselves qualified to practise as well as others of the Profession; and then they set to Work as boldly, as if neither Life nor Limb, of either Mother or Child, was in any Danger, to the no small Detriment (I might say, Destruction) of Numbers, who are daily killed by such People. And what adds to the Misfortune is, that the weaker and more ignorant these Men are, the more freely they use Instruments, and that too, very often, to the Destruction of the Mother as well as the Child; so that the chief Business of a Man- or I and one; mostly which is in Practitioner

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Practitioner in Midwifery was only to make Use of Instruments.

These Sort of Men consider Midwifery rather as an Art only than a Science; whereas it may properly be said to be composed of both: Of the first, as to the Manner of Operation; of the last, as the Mothers are subject to so many Disorders and Complaints, that frequently attend their Pregnancy and Lying-in, which call out for Medical Skill rather than manual Operation. Hence we see, both Learning and Dexterity are required in Practitioners of this Kind; and where they are united in one and the same Person, happy it is for the Patient; especially for those who live at a Distance from a large Town, when another's Assistance cannot so easily be had in Time.

I do not pretend, that what I here offer to the Public is all my own; for it is impossible, that any Set of Reasons and Arguments, entirely one Man's, should, at this Time of Day, be offered on a Subject, which has been so long obvious to the Reflection of all thinking Persons: And notwithstanding several Treatises have been published on these Subjects, yet the Manner in which the Authors have treated them, is either too short to be instructive, or too prolix, requiring more Study than some People will give themselves the Trouble of, to pick out the necessary Elements for composing an orderly System; and any Pro-

posal

poset whatsoever, that promises greater Advantages in the Execution and Practice of it (which is what I aim at here) though it has been wrote upon ever so often, is still proper to be made public; especially as the Manner in which I have drawn up this Essay, is not only somewhat new, but I likewise mention my new Improvements in the Manner of delivering Women with more Safety, Ease, and Expedition, both for Mothers and Children, in the very worst of Cases, than by any other Method heretofore practised by other Men; some of which were sent to several of the most Eminent in their Profession, whose Approbation induced me to lay them before those SOCIETIES the most remarkable in Europe for their superior Skill and Knowledge in all the Branches of Medical Learning and Practice. This Method I took to publish them through those Channels, in some measure to stop the Mouths of the ill-natured and stupid Part of Mankind; the first always finding Fault with any Thing new, although ever so beneficial to their Fellow-Creatures, if not invented by themselves; and the latter Sort are displeased, although they neither can apprehend the Reasoning, nor understand how to follow the Practice. This was all I intended to have done at first, till I was informed, that another Person was about to publish my Improvements with some other Works of his Own; this put me upon the Thoughts of publishing them

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them myself, especially as I had drawn up the Heads of the following Essay for the Instruction of the Son of a Friend and Acquaintance of mine, who was very desirous of being Master of every Branch of Midwifery.

Besides the Improvements which I laid before these Learned Bodies, there are, in this Essay, a great many Remarks and Methods of Practice entirely new, that are founded upon Reason and Experience, which is the surest Foundation in the Practice of all Branches of Physic. For, as Nature discloses herself in an obscure Manner, we must strictly observe her Operations, by which we shall see the Facts; and then a thorough Knowledge of Philosophy and Anatomy will enable us, by such Guides, to penetrate into her secret Principles; so that these may be said to support or assist each other, as two Lights which ought to unite to dissipate the seeming Obscurity of Nature. For, as Observation comprehends the sensible Qualities of Bodies, the Course of Diseases, their Symptoms, and the Effects of Medicines and Applications; so Reasoning from the Structure and Functions of the Parts, the Compositions of mixed Bodies, the Qualities of the circulating Fluids, the Nature of Aliens, and the Action of Medicines, enables us to account for the Alterations we find. We know therefore, I verily believe from our Physicall Experiments, Nature, and the Operations of Nature.

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times, founded upon the Causes of Diseases, the Observations of their Symptoms, and the Laws of the Animal Oeconomy, is what constitutes the true Theory; which is no more than Practice reduced to Rules. This I have endeavoured to do in the following Essay: wherein I have tried to illustrate each Branch in as proper and intelligible a Manner as I, by the most diligent Enquiries, and the nicest Observations that I could make, am capable to do; without any Regard to that Authority, which bore Sovereign Sway in the Schools of Physic so long: And where-ever I have Occasion to mention Facts from others, to confirm and establish, or to render my Notions more intelligible, I have quoted my Author, that the World may judge, whether I have understood him right, and have delivered his Sentiments down with that Justness and Candour, which a strict Adherer to Truth ought to do. For in a Thing of this Consequence, where the Lives of so many Persons are daily concerned, an Author ought to be particularly cautious not to mislead People into an Error; therefore whatever I have read of, or heard from Others, which I thought useful, I have mentioned; and where-ever I deviate, either in Sentiments or Practice, from any Writer or Practitioner, I humbly offer my Reasons for so doing to the Consideration of better Judges, being always desirous to be convinced, if I should err, and shall

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shall think myself obliged to those, who will give themselves the Trouble to do it properly, and shall say with HORACE,

— Si quid novisti rectius istis,
Candidus imperti; si non, his utere mecum.

But for those People, who like Birds of Night scream in the Dark, when none can see them; and like cowardly Enemies, unseen, shoot their invenomed Darts at me, in secret Whispers, or anonymous Papers, such Creatures may spit their malignant Choler, till it consume Themselves, before I shall regard them in the least.

This Essay consists of Four Parts:

In the First, is given an Anatomical and Physiological Description of such Parts, as are necessary to give a thorough Knowledge of the Bones of the Pelvis, and their Structure; the true Fabric and Situation of the Womb before it becomes pregnant; and the various Alterations it undergoes from the Beginning, and during that State, till its Reduction to its former Condition after Delivery: In which is included a minute Description of it, as taken from a Person that was opened, after dying undelivered at her full Reckoning; The regular Progress of the Embryo and Secundines, from the first Beginning after the Impregnation of the Ovary, to the Time of Delivery at the Nine Months End,

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End, is also shewn; together with a complete Description of the Placenta, Chorion, and Amnios; their Use; the Manner how the Fœtus is nourished, and how the Circulation is carried on betwixt the Mother and Child; whereby several vulgar Errors are set aside, and a regular System of the Womb is proved: To which is added a Description of natural Labour, with an Account of whatever is to be done thereupon.

In the Second Part, the various Disorders peculiar to a Pregnant State are described and accounted for; and a Method to remove or relieve them is set forth.

The Third Part contains a Method of assisting Women in Preternatural Labours, at or near their full Time of Reckoning, either with or without Instruments: In which are shewn the Author's Improvements in that Branch of Midwifry; whereby Women may be delivered with more Ease, Safety, and Expedition, even in the most dangerous Cases, than was ever practised before: In which are demonstrated the Dangers and Inconveniencies which attend the Use of the Scissars, Crochets, and Forceps of all Kinds heretofore used; with a Description of One invented by the Author, more safe than the other; shewing how they are to be made, with Rules laid down for that Purpose.

The Fourth and Last Part contains an Account of the various Causes of Abortions; which

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which will, and which will not admit of any Relief. In the first Case, a Method of preventing the Causes from taking Effect is proposed, with proper Indications of Cure, in Reference to each of them, as is confirmed by Experience; To which is added, a Description of the Disorders peculiar to Lying-in Women and New-born Infants, with their Causes, and Method of relieving them. A new Method of delivering Women is shewn, in violent Floodings, whether from Casualties during a pregnant State, or from all or Part of the Secundines being left in the Uterus for some Time after the Birth of the Child, and after the Mouth of the Womb has been greatly contracted; the Instrument, and Manner of using it being of the Author's own Contrivance. To these also are added the Author's Discoveries how to prevent, or mitigate, some Inflammations of the Womb, and After-Pains, in a very safe Manner, with few or no internal Medicines, which, at that Time, often increase one Complaint, while they relieve another. The Whole is interspersed with Eighteen Copper-Plates, and with some Observations of curious Cases, that the Author has met with in his own Practice, applicable to what is herein mentioned.

Some inconsiderate People look upon Copper-Plates, in this Case, to be useless; but judicious
a
Persons

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Persons must be sensible, that in describing Objects not to be seen, the Reader will have a better Idea of them from a true Representation upon a Plate, than only from a bare Description, as is evident in all Branches of Philosophy. To all which is added a most complete Index, for the more ready finding out what is necessary to be done in, or how to account for, any particular Case or Symptom; whence it is also a Table of the Contents.

Having now given a Bill of Fare, I shall not long detain the Reader from his Entertainment, and shall only add, that I have set down my Thoughts, Observations, and Discoveries, in as faithful a Manner as I could; and am very sensible, there are yet many Defects; but I am certain, that, with all its Imperfections, it will be of no small Benefit to Mankind, if my new Method of Practice be as judiciously executed, as I have faithfully directed; which I no longer concealed, than to be convinced, from Experience, of its Superiority to all other Methods heretofore practised; for I think nothing can be more mercenary, nay, I may say, so inhuman, as to conceal what, if made public, might save the Lives of Thousands; and it was always my Opinion, that not to save Life,

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Life, when in a Person's Power, is to commit Murder. To save Lives, therefore, and to avoid many Dangers, is the chief View of my Publishing these Things; which is, doubtless, a sufficient Motive for the World to give them a good Reception, especially as it would have been more beneficial to me to have concealed, than thus to reveal them.

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Life, even in a Person's Power, is to come
and Minister. To save Labor, therefore, and
to avoid many Dangers, in the chief View of
my Publishing these Things, which is, doubt-
less, a sufficient Motive for the World to
give them a good Reception, especially as it
should have been more beneficial to me to have
conceded, than thus to reveal them.

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Rogn

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It is to be known, in order to give the
various Partitions of the Part of which
this may be said to be intended, or in-
cluded, and to show the Order and Me-
thod

E S S A Y
TOWARDS A
NEW SYSTEM
OF
MIDWIFERY.
P A R T I.

AS a thorough Knowledge of the Structure of the Parts is absolutely necessary, not only for delivering Women, but also for understanding the Nature of their peculiar Diseases; their various Symptoms, Causes, and Method of relieving their Complaints; I shall begin with that Part of Anatomy, which I think to be most necessary to be known, in order to shew the various Formations of the Parts by which Births may be said to be impeded, or forwarded, and to shew the Causes and Method

thod of curing the Disorders peculiar to the Sex, omitting those Things which I think too remote from my Subject; which I shall do for Brevity's Sake.

§ 1. Every one who intends to practise Midwifry, ought to make himself well acquainted with the various Shapes of the Pelvis in different Peoples, both by Inspection of the Bones, and by the Introduction of his Hand between the Os Coccygis, the Ischia, the Os Sacrum, and the Os Pubis; by which Means he will be the better able to make the nicer Observations of the different Forms of that Opening. For some will be found to have the Os Pubis very near the Sacrum, so as to make the Passage between very narrow, and somewhat elliptical, whilst others have the lower Part of the Sacrum and Os Coccygis inclining too much forward in the Bottom of the Pelvis, so as to make that Part narrower than, in general, it ought to be. By being Master of these various Shapes, the Operator will be better able to judge how to conduct himself, when with a Woman in Labour.

In order to come as near to the true and just Proportion of the different Parts composing the Pelvis, I have been at the Pains to examine and measure the Bones of the Pelvis of several Female Skeletons, and having found one of a good sizeable and well-

propor-

proportion'd old Woman (whom I knew when alive) I took the just Dimensions, and wrote them down as a Standard, and have had four different Views of them taken, with their respective Proportions, as may be seen in *Tab. I. and II.* With this I have compared several other well-proportioned Women, and have found but very little Difference; in some Parts, perhaps, there might be a tenth, an eighth, or a sixth Part of an Inch straiter, or wider; so that this Skeleton has been the nearest to a Medium of any I have met with.

§ 2. That the Reader may the better understand the Form of the *Pelvis*, I shall divide it into two Parts, *viz.* the upper *Pelvis*, or lower Part of the Hypogastric Cavity, *Tab. I. Fig. 1.* and the lower or true *Pelvis*, *Tab. I. Fig. 2.* a Front and Side-view of which may be seen in *Tab. II.* all with the Distances of each Part, being just the Fourth of the Scale of those of the Woman's Skeleton.

An Idea of the exact Shape of the *Pelvis* may be conveyed to the Reader, by resembling it to a Barber's Basin; the Border includes the whole Cavity of the Basin, tho' there be another distinct Cavity within the said Border. Thus the lower Part of the Hypogastric Cavity, *Tab. I. Fig. 1.* if consider'd from Hip to Hip, may be said to be somewhat of an Elliptical Form; for, from the Inside

of one *Ilium* to the other, is five Inches and a Half, *Tab. I. Fig. 1.* but from the *Os Sacrum* to the Inside of the *Pubis*, at the Top, is only four Inches and one Quarter, as may be seen in *Tab. I. Fig. 1. Tab. II. Fig. 1.* The lower or true *Pelvis* is posteriorly formed by the *Os Sacrum* and *Coccygis*, *Tab. I. Fig. 2. Letter a a b, Tab. II. Fig. 2.* anteriorly, by the inner *Crista* of the *Os Pubis*, *Tab. I. Fig. 2. *. Tab. II. Fig. 1. **; and laterally, by the inner or sharp Processes of each *Os Ischium*, *Tab. I. Fig. 1. Let. b. Tab. II. Fig. 1. and 2. Let. b.* and the lower *Crista*, or *Tuber Ischii*, *Tab. I. Fig. 2. Let. i. Tab. II. Fig. 1. and 2. Let. i.*

This the accurate ALBINUS has thus described, *De Ossib. p. 164. n. 192.* ‘Deinde cum Coccyge Pelvem faciunt cavum magnum, fere orbiculatum factum a posteriore parte, ab Offe Sacro & Coccyge; a lateribus ab Ischiis; a priore parte ab Ossibus Pubis.’ And that Excellent Anatomist, Mr. Professor MONRO, in his *Osteol.* says, ‘In the Description of the *Os Sacrum*, I mentioned its firm Connection on each Side to the *Ossa Innominata*, which, with that Bone and the *Os Coccygis*, form the Bony Sides of the Cylindrical Cavity, the *Abdomen* is contracted into, at its lower Extremity, and is universally known by the Name of the *Pelvis*.’

This

This lower or true *Pelvis* is nearer of an Orbicular than an Elliptical Form; for betwixt the *Sacrum* and *Os Pubis* at the Top, *Tab. I. Fig. 1.* from *Let. a* to *l*, and *Tab. II. Fig. 1.* from *Let. a* to *l*. is four Inches one Quarter; and betwixt the inner or sharp Processes of each *Ischium*, *Tab. I. Fig. 1.* and 2. *Tab. II. Fig. 1.* and 2. *Let. b*, is four Inches one Quarter; and betwixt the lower *Crista*, or *Tuber* of each *Ischium*, *Tab. I. Fig. 1.* and 2. *Let. i*. *Tab. II. Fig. 2. Let. i*. is four Inches and three Twentieths of an Inch.

Here we cannot too much admire the Divine Providence's singular Protection of Women, by disposing this Cavity and the Passage from it, so as to answer the Shape of the Child's Head, when naturally presented; as will be taken notice of in its proper Place.

§ 3. The *Os Coccygis*, *Tab. I. Fig. 2. Let. b*. *Tab. II. Fig. 1.* and 2. *Let. b*. is by some imagined to impede the Expulsion of the Child; but this, I will venture to affirm, along with *LA MOTTE*, (a) never happens in a natural Way, by which I mean, when the Woman is proportionably made: Because the Distance betwixt the *Os Pubis* and *Coccygis*, *Tab. I. Fig. 2. Let. b**, is greater than between the *Pubis* and *Sacrum*, *Tab. I. Fig. 1. Let. a l*. Therefore,

(a) *Cap. IV. Lib. iii. Obs. 110.* when

when the Child has passed thro' a narrower, it will more easily pass thro' a larger Passage. And LA MORTE observes, That was the Child not able to force the *Coccyx* to yield, yet some Part of the Child's Head would give way. Thence the so much boasted-of Assistance to the Woman, by introducing a Finger into the *Vagina* or *Anus*, must fall to the Ground; and also because such Force as must arise from thence, as DEVENTER very justly observes (*b*), will not be sufficient to move the End of the *Coccyx*, when scarce the Strength of the whole Hand can do it. Nay; I'll venture to affirm, that by introducing a Finger or Thumb, either into the *Anus* or *Vagina*, it will take up more Space betwixt the *Coccyx* and *Os Pubis*, than any Person can make the *Os Coccygis* give way, without breaking or dislocating it: And how much those Parts must be bruised, with such a Force as would be here required, any Person may easily judge, and may imagine what bad Consequences may thence arise.

EXPLANATION.

Tab. I. Fig. 1. exhibits the upper Part of the *Pelvis*, or lower Part of the *Hypogastric Cavity*.

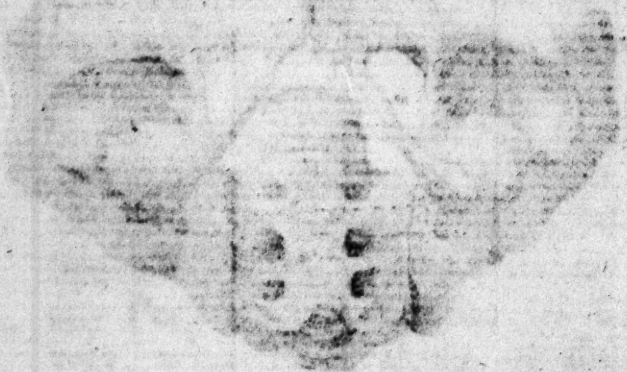
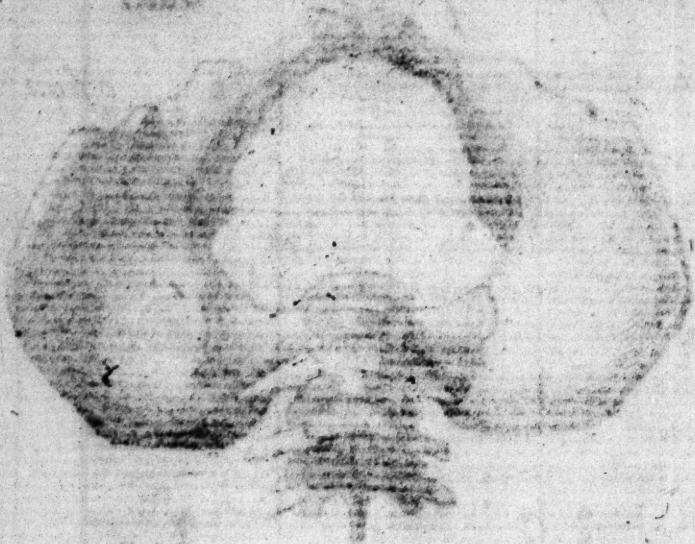
(*b*) P. 118, 119.

a, The



Tab. I. Pl. 1. exhibits the
of the Pelvis, & lower Part of
Gastric Cavity.





a, The first or upper Bone of the *Os Sacrum*. *c*, The *Os Ilium*, from the extreme Parts of which is ten Inches six Tenths. *d*, The *Crista* of the *Os Ilium*; from the Extremities between each is nine Inches three Tenths. *e*, The *Os Ischion*. *b*, The inner or sharp Processes of the *Os Ischium*, between which is four Inches one Quarter. *k*, *l*, The *Os Pubis*.

Fig. 2. shews a View of the Bones of the *Pelvis*, from the *Os Coccygis* upwards.

a, The first or upper Bone of the *Os Sacrum*. *b*, The *Os Coccygis*. *d* and *h*, The same as in *Fig. 1*; *i*, The lower *Crista*, or *Tuber Ischii*. *k*, *l*, The same as in *Fig. 1*. *m*, The *Foramen Magnum*.

Fig. 3. shews the Bones of the Top of the Head of a new-born Child, with its Dimensions.

a, The Fontanel. *b*, The *Os Frontis*. *c*, The Occiput. *d*, The *Sutura Lambdoidalis*. *e*, The *Sutura Sagittalis*. *f*, The *Os Bregmatis*.

Fig. 4. shews the Side-View of the Head of a new-born Child, with its Dimensions.

a, The Apex. *b*, The Occiput. *c*, The Frons. *d*, The *Sutura Sagittalis*.

Tab. II. shews the Side and Front-View of the *Pelvis*, Loins, and Womb of a Woman before Delivery.

Fig. 1. *a*, *a*, The Bones of the *Os Sacrum*. *b*, The *Os Coccygis*. *c*, The *Os Ilium*. *d*, The

fore Processes of the *Crista* of the *Os Ilii* *e*, Part of the *Os Ischii*. *b*, The inner or sharp Processes of the *Os Ischii*. *i*, The *Tuber Ischii*. *k, l*, The *Os Pubis*. *m*, The *Foramen Magnum*. *o, o, o*, The Out-lines of the *Uterus*, in its full Extent. *p, p, p*, The *Vertebrae* of the Loins. *q*, A Line drawn from the Center of the *Pelvis*, to the *Fundus Uteri*.

Fig. 2. shews the Front-View of the Bones of the *Pelvis*.

a, b, c and *d*, The same as in *Fig. 1.* *e, f, g*, Part of the *Os Ischii*. *b, i, k, l, o, o, o*, the same as *Fig. 1.* *q*, The Head of the *Os Femoris*.

§ 4. The *Vagina* is the next necessary Part to be considered; it is a Tube, reaching from the *Pudendum* to (properly speaking) a little beyond the Orifice of the Womb, *Tab. III. Fig. 1. Lett. d*, in Women not with Child, lying between the Bladder and the *Rectum*: As to Length and Width, it is of various Dimensions in different People, altho' Virgins; but in general, at a Medium, is about five Fingers Breadths long, and two moderate in Width, in Maids; but in Women who have had Children, both its Length and Capacity are various.

It is of a lax Substance, consisting of two Coats; the Internal membranous and much wrinkled, especially in Virgins, *Tab. III.*

An Essay

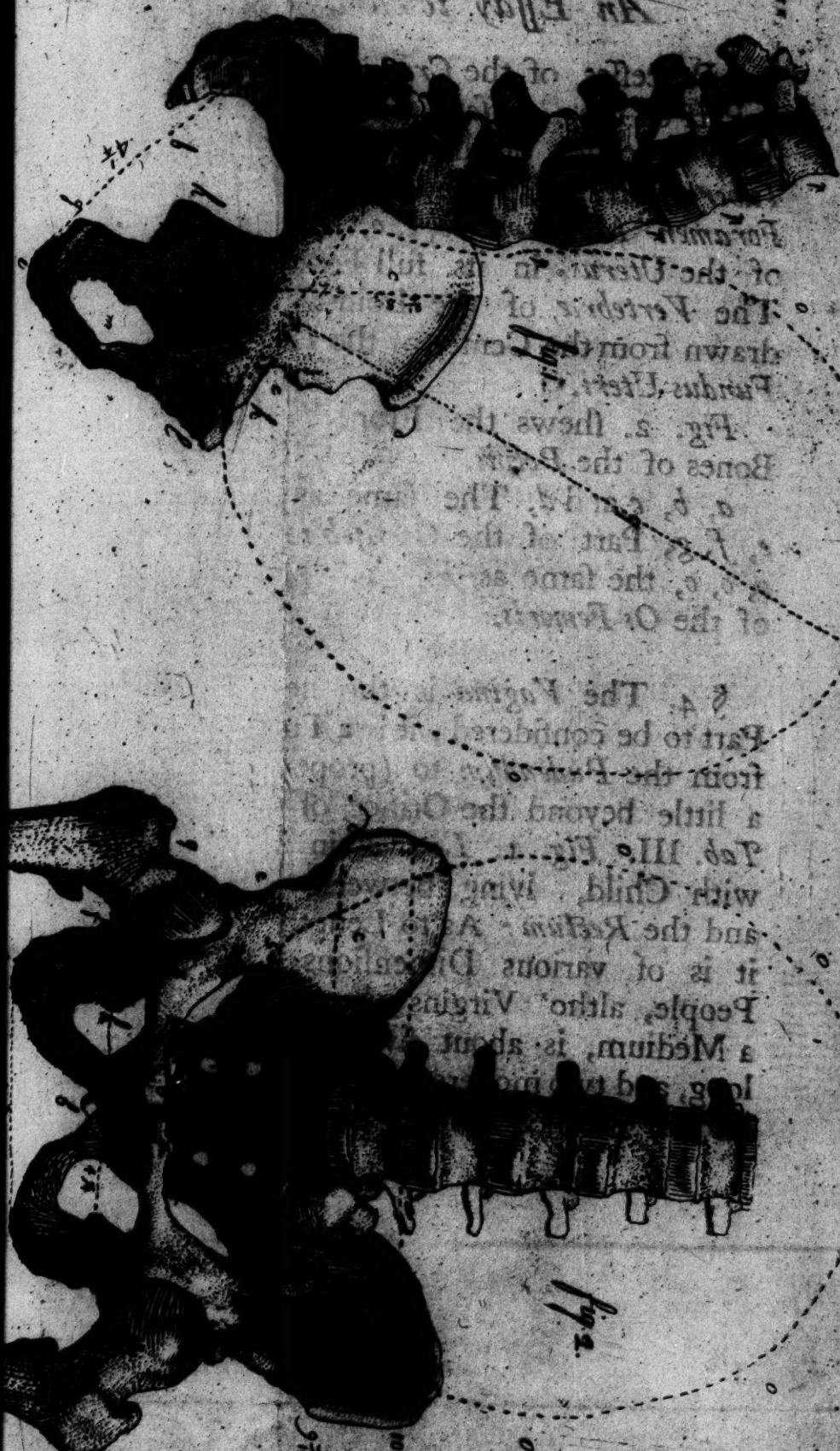


Fig. 2.

III. *Fig. 1. Lett. c, c, c.* The External is muscular, being composed of longitudinal fleshy Fibres, interwoven with Blood-Vessels (*c*): It joins the Extremity of the Body of the Womb (*d*), and surrounds its Orifice a little obliquely, in such a Manner (suppose the Woman erect) as that anteriorly the *Vagina* lies very near the Orifice of the Womb, *Tab. III. Fig. 1. Lett. d*, and posteriorly is at a greater Distance from it; which makes the Mouth of the Womb appear to advance more into the *Vagina* behind, than before (*e*).

The *Rugæ*, *Tab. III. Fig. 1. Lett. c, c, c*, are not only intended by Nature to titillate the *Glans Penis*, but also to give an Opportunity to the *Vagina* to distend in Time of Labour; and the Longitudinal Fibres, by shortening in Time of Coition, draw or lift up the *Os Uteri*, for the more ready Admission of the *Semen*; and at the same Time that these Fibres shorten the *Vagina*, the inner Coat becomes still more wrinkled, which occasions a greater Titillation.

The End of the *Vagina* next the Womb, is wider than that End next to the *Labia*; and therefore it may justly be said to be somewhat conical, especially in pregnant Women. For as that End of the Tube is fixed to the Womb, as the *Uterus* is di-

(*c*) De Graaf de Mulier. Organ. p. 226. Winflow. Expos. Anat. Traité de Bas. Ventre, No. 648.

(*d*) Winflow. ib. No. 645. (*e*) Ib. No. 646.

stended during Pregnancy, so must that End of the *Vagina* be distended proportionably, and therefore becomes like a Funnel. And as the Womb ascends in Pregnancy, it rather lengthens the *Vagina*; which Lengthening may be said to be one Sign of Pregnancy, as RUYSCH observes (*f*).

To be well acquainted with the Connection of the *Vagina* to the Womb, is of the greatest Importance in Midwifry; for by this Knowledge the Artist becomes Master of the *Touch*, which is the only sure Guide to him in Deliveries; or to form his Judgment by, in some particular Cases, § 5. § 42.

The *Vagina* has its Arteries from the Hypogastric or internal Iliacs (*g*); and it has its Nerves from the *Sacrum*, and also several Branches from the *Lumbares*, *Plexus Mesenterici*, and *Sympathetici Maximi*, or Greater Intercostals (*b*). Hence several of the most remarkable Phænomena, in some Particulars relating to the Female Sex, may be accounted for, both before and during the Time of the Menstrual Discharge, Pregnancy, *Lochia*, &c. and also why any Inflammation or Pain in the *Uterus* affects the Head and Stomach with a Vertigo, Delirium, Loathings and Vomitings. Hence also may be accounted, why some are so fond of giving

(*f*) Thes. 8. No. 7. not. 6. (*g*) Winslow. Exp. Anat. Traité de Bas. Ventre, No. 254. De Graaf, p. 226. (*b*) Winslow. No. 623.

New System of Midwifry. 11

Suck, and why Tickling the Nipples occasions an agreeable Sensation in the *Clitoris*, in such Persons who have the greatest Number of Branches of Nerves from the Intercostals.

§ 5. This Canal (*Vagina*) leads to that great Nursery of Mankind, the Womb, contrived for the Reception and Sustainance of the *Fætus*; which may very justly be said, with Regard to its Substance and Structure, to be as extraordinary a Piece of Mechanism, as any in the whole Body. It is situated in (what is properly called) the *Pelvis*, § 2. *Tab. I. Fig. 2. Tab. II. Fig. 1.* between the *Intestinum Rectum* and the Bladder; which, when full of Urine, covers the Womb, if it be not pregnant; but yet is no ways annexed either to it or the *Rectum*, excepting by the Neck. For, did it adhere to either of them more than it does, it would be impossible for it to extend itself so as to occupy almost the whole Capacity of the lower Belly, without putting the Woman to the greatest Torments, by retiring higher up as the Woman advanced in her Pregnancy, and thereby pulling or tearing the Parts to which it was annexed, § 4.

The Bottom of the Womb, in its natural State, is turned a little to the *Os Pubis*; and its inner Neck towards the *Sacrum*, thereby making an obtuse Angle with the *Vagina*. The more obtuse this Angle is, the

the more liable, *cæteris paribus*, the Woman is to be got with Child, & *vice versâ*. Hence we see one Cause of Barrenness in Women, whenever this Angle is so acute, that the Longitudinal Fibres of the *Vagina*, § 4. cannot raise the *Os Uteri*, in Coition, for the Reception of the *Semen Masculinum*.

Some People may look upon this Part of the Description to be no way material; but it will be found to be absolutely necessary; because the strict Observance of it will be of great Use in *Touching* pregnant or diseased Women, § 42. thereby to know whether, what may seem to occasion the Disorder, be within, or without the Womb, in order to pursue the properest Method of Cure—For Example: Suppose a Woman increases daily in Bulk, and if it be disputed, from some particular Symptoms, whether what extends her Body be within, or without the Womb, a skilful Person may, by *Touching*, easily know; because, if the *Os Tincæ* be naturally prominent, the Complaint is not from a Child, False-Conception, or Dropsy in the Womb, of any considerable Bulk. But, on the other Hand, if it seems shorter, plainer and thinner, it is very probable (if not certain) that the Cause is within the *Uterus*. Sometimes it happens, that the *Os Tincæ* cannot be reached by the longest Finger, an Instance of which happened in our County

County Hospital (*York*); which Case was (as far as I could make out) as follows.

OBSERVATION I.

Mary English, of the Parish of *Sutton* in the *Forest*, a married Woman, aged 30, who had had several Children, in 1748, began to have all the Symptoms of being pregnant, except that she had her *Menses* regularly (after having stopt the two first Months) although in less Quantity than usual; in this Way she continued for seven or eight Months, when she began to have Milk in her Breasts. About this Time she began to have a Suppression of Urine, sometimes partial, sometimes total, insomuch that one, who calls himself a Surgeon and Man-Midwife of this City, was sent for, who drew off her Urine with a Catheter; which she was obliged to use frequently. She living at a Distance from *York*, and the Expence of a Person attending her at her own House, being more than her Husband (who was but a common Farmer) could afford, she was recommended as a proper Patient for our County Hospital; wherein she was admitted, and had her Urine drawn off regularly, till by proper Methods she was able to make Water without the Assistance of the Catheter. During her Residence here, she still seemed to advance in her Pregnancy, her Breasts still filled

filled, and yet she had her *Menses* as before; in which Way she continued till the eleventh Month, according to her own Rec-
 koning. Altho' I had resigned my Place as one of the Physicians of the Hospital in 1746, I was yet, upon this Occasion, called in. Upon examining and *touching* the Patient, I could not possibly reach the *Os Tineæ*, neither could I find any thing of the *Uterus*, nor yet any Hardness could I feel by pressing the *Abdomen*; I repeated my Searchings, and found a large Tumor adhering to the *Os Sacrum*. The Woman continued in this Condition about a Month longer, and, as she had a Passage for her Urine, was then dismissed. About five or six Weeks after this, the Suppression of Urine returning, she came to York and had it extracted, and then returned Home again; where she continued about two Months longer, with the same Symptoms, but never had a Child since; and I am informed, she died soon after. But to return —

§ 6. The Figure of the Womb is like a flatten'd Pear, or rather a Triangle with the Corners rounded off, having a Hole pierced through each Angle, *Tab. III. Fig. 1. Lett. d, i, z.* It is about three Fingers-breadth long, reckoning the *Collum Minus*, which is one Finger; two and a half broad a-cross the

the *Fundus*, and at the *Cervix* not two (i), in Women who have had Children; but in those who have had none, it is not much above half the Size. In Infants, DE GRAAF reckons the Weight to be about a Dram, or a Dram and half; but in Women past Child-bearing, and Virgins at full Puberty, it weighs about an Ounce, or an Ounce and half. But it must be observed, that both its Weight and Size varies in the same Person, as the *Menses* happen to be nearer to, or farther from their Time of appearing, § 8.

The Cavity of the *Uterus*, in Virgins, will contain a small Almond; and there is a kind of a Ridge, from the *Os Tincæ* to the Bottom of the Womb, both on the upper and lower Side of it, which are so near, if not quite contiguous to each other, as to make a Division in it, leaving, as it were, a Ventricle on each Side; whose End towards the *Cornua* is more capacious. In these Ventricles, at the two Angles of the Womb called *Cornua*, are two small Holes, being the Passages out of the *Fallopian Tubes*, *Tab. III. Fig. 1. Lett. i.* for the Admission of the impregnated *Ovum*.

On the Outside of the *Uterus*, where it opens into the *Vagina*, there are Lips making an Appearance somewhat like a young

(i) De Graaf de Mulier. Organ. cap. 8.

Puppy's Nose, *Tab. III. Fig. 1. Lett. d.* with an Entrance therein, called *Os Tincæ*, of about a Finger's Breadth long, being wider on the Outside, than into the Entrance into the *Uterus*, which within is full of *Rimulæ*, called by MORGAGNI (*k*) Valves, *Tab. III. Fig. 1. Lett. f.*

From this Make of the *Os Tincæ*, we find that Providence has been kind, not only in thereby making an easier Admission of the *Semen* into the *Uterus*, but also to keep the inner Side of the *Os Tincæ* close, while the outward extends or opens, like a Funnel, as the *Fœtus* grows larger, and presses the Womb outwards from within.

In the Cavity of the Womb, but more particularly near its Neck, are a great Number of small Glands, that secrete a *Mucus* or Liquid, which, when discharged in too great a Quantity, is the Disease commonly called the *Fluor Albus*. The Reason why Providence has placed a greater Number of these Glands near the Neck of the Womb, seems to be, because the *Fundus Uteri* is, or should be taken up by the *Placenta*. The chief Use of this Liquor or *Mucus* is to moisten and lubricate that Side of the *Chorion* next to the Womb, and to help to relax the *Os Tincæ* against, and in the Time of Labour. For we find, that

(*k*) *Advers. Anat. I. p. 12, 13, 14. Adv. IV. p. 65, to 68.*

when

when a Woman falls into Labour, by any Accident, before there is a sufficient Quantity of this *Mucus* secreted, or that these Glands are any way defective, that the Birth is more tedious and difficult, especially if the Waters have run off any Time before.

§ 7. DE GRAAF (1) observed a considerable Disparity in the different Parts of the Womb, as to Firmness and Strength; the outer Part of its *Fundus*, he tells us, is not so firm and nervous as the inner; nor that, as its neighbouring Part the *Cervix*. The Womb is composed of a spongy Substance (m) something resembling that of the Spleen, or rather that of the *Corpora Cavernosa Penis*, in which several Arteries open themselves into Cells or Sinuses, *Tab. III. Fig. 1. Lett. g. Tab. IV. Lett. k, k, k*, whose Orifices, *Tab. III. Fig. 1. Lett. b. Tab. IV. Lett. e, e*, open into the Cavity of the Womb, and pour out Liquors therein, which may be seen to ooze out at any Time, by gently pressing the Substance of an opened *Uterus*. These Cells or Sinuses, in Time of Pregnancy, when distended, increase the Thickness of the Womb.

The exterior Part of the Substance of the Womb is composed of reticular Bundles of muscular Fibres, mentioned by MALPI-

(1) De Mulier. Organ. p. 106.

(m) Ib. p. 240.

GHIUS (n). The inner Side of the *Fundus*, § 55. or Bottom of the Womb, is composed of a turbinated Set of Fibres, found out by RUYSCH, and is therefore called his Muscle, or *Musculus Orbicularis* (o) *Tab. V. Lett. b, b, c, d.* In the Womb of a Person I saw opened, who died undelivered, I not only observed these Fibres here mentioned by RUYSCH, but also muscular Fibres which seemed to strike out from a Center, like so many *Radii*, which were placed betwixt the Orifices at the, then, *Fundus Uteri*, quite as far as where the *Fallopian* Tubes enter the Womb at *l, l, Tab. IV.* which I do not find mentioned by any Author. From this Disposition of these Fibres in a circular Course, we can account for several different Phænomena in Births, and the Disorders of the Sex, as will appear more evident hereafter, § 40, 55.

§ 8. These Orifices, or Canals, § 7. *Tab. III. Fig. 1. Lett. b. Tab. IV. Lett. e, e, e, e,* are found to abound more particularly in the *Fundus* of the Womb, and are only the Extremities of the Canals that come out from the larger Cavities, or Sinuses, *Tab. III. Fig. 1. Lett. g. Tab. IV. Lett. k, k, k, k,* § 7. which are lodged within the Substance

(n) Epist. ad Spon. (o) Ruysch Epist. Vatro de Musc. Orbic. Hecqueti Epist. ad D. D.—Thes. 6, Tab. 4. No. 5.—Advers. Dec. 3. p. 35. Tab. III. Fig. 1. De Graaf Org. Mul. Tab. VII. B. D.

of the Womb. In a Woman who died at her full Time undelivered, I observed several Orifices opening out of the Substance of the Womb into the same Sinus, sometimes four, sometimes five, and sometimes six, § 10. *Obs.* II.

These Sinuses are membranous Cavities communicating with each other, and have numerous Arteries spread on them, whose lateral Branches open into Cells, from which Veins go out to be joined to the other Veins, that return the Blood from the other Parts of the Womb (*p*). They are distended with Blood in the Time of the *Menses*, when their Orifices are also enlarged (*q*). MAURICEAU (*r*) opened a Woman, that was hanged whilst she had her *Menses*, and observed, that the Vessels at the Bottom of the Womb were much larger than those at the Neck, and that little Lumps of Blood came out of the Orifices at the *Fundus Uteri* (*s*). Hence we see, that during Pregnancy, the Sinuses and their Canals, that open into the Womb, are gradually distended and enlarged; insomuch that at

(*p*) Malpigi. Epist. ad Spon. Littr. in Memoir. de de l'Acad. des Sciences, 1701. (*q*) Bartholin. An. Ref. lib. i. cap. 28. Morgag. adv. Anat. I. § 33. Adv. IV. § 27. (*r*) Obs. 49. (*s*) It is an Observation made by some, That when any Woman is hanged, the Operation forces down the Blood, so as to appear like the *Menses*.

the End of the ninth Month of Gravitation, they are so large as to admit the End of the biggest Finger, and the Canals or Orifices, which open into the Womb, will admit the End of the little Finger (*t*). These Sinuses are to be found through the whole Substance of the Womb (*u*), but are largest in the *Fundus Uteri*, where the Circular Fibres are seated (*w*), whereto the *Placenta* generally adheres, *Tab. IV. Lett. b, b, b*, and that too in all Positions of the Womb (*x*). Hence we see, both Arteries and Veins communicate with these Sinuses, and the Sinuses open into the Cavity of the *Uterus*, and chiefly at the *Fundus*, from whence we find, the *Menses* and *Lochi* flow from these Canals.

§ 9. These Sinuses are much more safe and useful, than any continued Arterious Canals could have been; for these last would occasion too great an Hæmorrhage, when the *Placenta* should be separated, § 26. to the 30th, inclusive; whereas, in this Way, the small Branches of the Arteries are so disposed upon the membranous Sides of the Sinuses, that they must be compressed as soon as the *Uterus* contracts, by which too great an Effusion of Blood

(*t*) Morgag. adv. Anat. I. § 26. Adv. IV. p. 47.

(*u*) Ib. adv. I. Tab. 3. Albin. Tab. 7. de Uter. Grav. vid.

(*w*) Ruysch adv. Dec. 2. No. 10. (*x*) Deventer Ars Obst. cap. 9. Morgag. adv. I. p. 45, 46. Adv. IV. p. 48, 49.

will be prevented ; and at the same Time, the Resistance which the Womb occasioned to its own returning Blood, by its Pressure on the large Veins being taken off when the Womb contracts, the lateral Branches of the minute Arteries can be very little distended with Blood, and consequently the Sinuses will be very little filled ; whence the *Lochia* must decrease, and grow paler. Hence we see the only Method, whereby to save a Woman's Life, whose *Placenta* separates before Birth, is to deliver her immediately. Hence we see also, that the stronger the Womb is, the sooner the *Lochia* will cease.

§ 10. From this Make, Substance, &c. of the Womb, § 6, 7, 8, 9, we may see the Usefulness of one Part of the Womb's extending more than another ; which is really the Case. DEVENTER (y) says, ' Si igitur
' ex omni parte æqualiter extenderetur, tunc
' sequeretur, ipsius Ligamenta in quartâ fi-
' gurâ habita in proportione Fundo æquè
' propinquâ esse ac in tertiâ. E contra pa-
' tet Ligamenta in isto extenso Utero mul-
' to inferiora esse ; unde concludimus Ute-
' rum in Fundo multò magis extendi quam
' in aliis partibus suis.' Again, he says,
' Quò magis Uterus extenditur, eò magis
' differre longitudinem & magnitudinem

(y) P. 39.

'Fundi supra Ligamenta.' RUYSCH (z) observed the same; as did ALBINUS (a): And also I compared the Womb of the Woman, who died undelivered, with these Tables, and found the same to be true, except in Respect to the Part to which the *Placenta* adhered. The Reader may have some Idea of it, by comparing *Tab. III. Fig. 1. Lett. i, i*, with *Tab. IV. Lett. l, l*, § 12. The having these Plates will be of no small Service to those who have no Opportunities of seeing Subjects from Nature, which are rare to be met with, § 12. Hence we can account for the Womb, except the *Fundus*, § 25. keeping nearly the same Density during its Distention in Pregnancy, and why the *Fundus* grows more dense than the other Parts.

The Thickness of the Substance of the Womb frequently varies in different Subjects; but then I must observe, that they were diseased *Uteri*: For MAURICEAU (b) says, the Substance was three or four Fingers-breadth thick, where the Child had burst out into the *Abdomen*. And SCHURIGIUS (c) mentions another Woman at her full Time, whose Womb burst in Labour; the Thickness of which was that of two Fingers-breadth. And ANDREA

(z) Thef. 8. No. 7. not. 2. & not. 6.
de Uter. Gravid. (b) Obs. 251. (c) Embryo-
log. § 3. cap. 3. § 7. p. 247.

Low (*d*) mentions another Woman, who at her full Reckoning was opened, when the Womb was lacerated; and the *Fundus*, being cut, was about three Fingers-breadth thick. MAURICEAU (*e*) opened another Woman at her full Time, and found the Child all corrupted, and the *Uterus*, on the anterior and inferior Parts, was as thin as the Urinary Bladder: But towards the posterior Part it was about the Thickness *de deux Lignes*, not only in that Part whereto the After-birth was attached, but also for two Fingers-breadth about it. Mr. PAUL PORTAL, Man-midwife in *Paris*, in 1681 (*f*), opened the Womb of a Person who died two Hours after her Delivery; and the Womb being cut was half an Inch thick, and bright, except in that Place where the After-burthen had been joined to it; which was thicker than any other Part. ALBINUS's Tables shew, that the *Uterus* is above four Tenths of an Inch thick. The Womb of one I saw opened, was, on the Side of the *Fundus*, near three Fourths of an Inch thick, when the Sinuses were all empty.

(*d*) An. 9. Obs. 115. (*e*) Obs. 149. (*f*) Obs. 76.

OBSERVATION II.

A Woman died undelivered at her full Reckoning, after the Waters were evacuated: Upon opening the *Abdomen*, the *Uterus* presented in its right Position; the *Fundus* reached up so high as to lie upon Part of the Stomach, as she lay upon her Back, pretty near the Form and Make as in *Tab. II. Fig. 2. Lett. o, o, o, o*; and when looked at sideways, seemed to project, as in *Tab. II. Fig. 1. Lett. o, o, o, o*, when full; but not quite so much as in this Figure; because, as the Waters were evacuated, the Abdominal Muscles, &c. had, in some Measure, pressed the Womb a little flat.

The *Uterus* being laid open longitudinally, the Child presented with its Shoulder to the *Os Uteri*; its Belly and Face being towards the Mother's Back, with the left Ear upon the left Shoulder, the *Vertebrae* of the Neck being quite separated by a Hook, which the Operator had made use of to extract the Child with; the *Apex* of the Head, therefore, pointed directly to the *Fundus Uteri*, as well as the Buttocks.

The Child being removed, the *Placenta* appeared adhering to the *Fundus Uteri*, a little inclined to the posterior Part of the Womb. The *Os Uteri* and *Vagina* were so cut

cut and mangled, by the Operator, that no Person could tell what they were.

The *Uterus* being taken out, the Sinuses, or Cavities, *Tab. IV. Lett. k, k, k, k*, were very distinct, into some of which there were five or six Orifices, that opened into them; into others, only three or four, which appear as at *e, e, e*: Upon wiping the Inside of the *Uterus* very gently with a Sponge, there seemed to be Pieces of a very tender, thin, transparent Membrane to adhere to it, in such Parts of the *Uterus* where the *Placenta* did not stick to it; but, as the Womb was somewhat corrupted, and the Membrane so very tender, we could not raise any Bulk of it, by either a Probe or Forceps, so as to be certain what it was; and therefore could not make so nice an Observation as I could have wished for. The *Fallopian* Tubes seemed to be placed as in *Tab. IV. Lett. l, l*.— But to return—

§ 11. The Arteries of the *Uterus* arise from the Spermaties (*g*), Hypogastrics (*b*), or internal Iliacs, and Hæmorrhoidals (*i*); and enter the Substance of the Womb, in a very direct Manner, below the *Fallopian*

(*g*) De Graaf Tab. 1. I K. Eustach. Tab. 13, 73, 18. (*b*) De Graaf Tab. 1. P. T. Eustach. Tab. 13, 74, 62. (*i*) Vater. de Utero gravido, Procem. & pag. 12.

Tubes

Tubes (*k*), where they are variously interwoven, and enter the other Parts composing the Substance of the *Uterus*, § 8, 9, 10, and have frequent Inosculations. The Veins are much the same, but without Valves. The Nerves are the same as those of the *Vagina*, § 4. The Lymphatics of this Organ terminate in a large Gland, situated in the Division or Bifurcation of the Iliac Vessels (*l*).

§ 12. These Things, § 6, 7, 8, 9, 10, and 11. being premised, it may not be improper to consider, how this wonderful Dilatation of the Womb is performed; and yet its Substance is increased in Bulk, as RUYSCH observed (*m*). *First*, then, it is evident, That the Substance of the Womb, when not pregnant, is very compact. *Secondly*, That it is of a whitish Colour. *Thirdly*, That, when pregnant, and in Proportion as it increases, it grows more and more spongy, § 8, 9, 10. *Fourthly*, That in the same Proportion, from whitish, its Colour becomes daily redder, till it approaches to blackish. *Fifthly*, That the *Menses* are generally obstructed, from the Time of Conception, though the *Fœtus* be so small, as not to require so great a Quantity of Blood for its Support. *Sixthly* and

(*k*) De Graaf Tab. 1. L, T, V, p. 149. (*l*) *Astruc*, Of the Diseases of Women, cap. 1. p. 12. (*m*) Thef. 6. No. 5, 21, 31. No. 1, & seq.

Lastly,

Lastly, That the *Uterus* immediately collapses, or rather contracts, after the Extraction of the *Fætus* and *Placenta*.

First, then, It hence appears, that the Acquisition of Blood changes the Colour of the Womb from whitish to red, when it enters the spongy Substance of the Womb, § 7. which it distends, and thereby increases its Bulk and Thickness, which increases as long as the Blood can enter its Substance, without having a Discharge thro' it: Whence we may see one Reason, why, till Puberty, the Womb increases in Bulk; after which, it nearly remains at the same Size till in a State of Pregnancy. For although the Woman grows larger, for some Years after Puberty, yet the Womb ceases to grow after the *Menses* appear: But when the *Placenta* is applied to the Inside of the Womb (which is a new Impediment to the direct Course of the Fluids, and so must renew their lateral Force) the Womb begins to grow again; and as all the different Parts must distend proportionably to their Strength and the distending Power, the *Fundus Uteri* is distended most, § 9, 11; and so, in Course, the Womb is less extended betwixt the *Os Uteri*, and the Part where the *Fallopian* Tubes enter it, at *i, i*, *Tab. III. Tab. IV. l, l*, than between that Part and the *Fundus*, *Tab. IV.*

That

That there should be a sufficient Supply of Blood for this Purpose, Providence has made the Hypogastric and Spermatic Arteries, that serve the Womb, larger, in Respect of it, than any other of the Arteries of the Body, in Respect to the Bulk of those Parts they serve (*n*); and they all (as I said before, § 11.) enter the Womb in a very direct Course, and that, too, very near that Part which requires the greatest Distention, *viz.* the *Fundus*. PITCAIRNE observed, That the Descending *Aorta* in Women is much greater, in Proportion to the Ascendant, than in Men; whose Ascending *Aorta* is much greater, in Respect to the Descending, than in Women; so that the Womb may receive a much greater Quantity of Blood, in a given Time, than any other Part; as is evident in violent Floodings. Hence we may see one Cause of a *Chlorosis* and Sterility, whenever these Vessels prove too small, in Proportion with the others, § 161. Hence also we can account, why the *Menses* appear out of a regular Course, in the Small-Pox, Fevers, &c. For the *Momentum* of the Blood, at the Womb, being made up of its Quantity and Celerity, whatever increases either of them, for any continued Time, will increase that Force on which the Distention of the Vessels, or

(*n*) *Simpson's System of the Womb*, p. 33.

the Flux, depends; & *vice versa*: And, consequently, if these be different, in different People, *cæteris paribus*, the Time of Eruption must also be different; which shews what Variety this Flux allows of, and what Skill is necessary, to make proper Applications in Female Complaints.

Secondly, It is demonstrable, that the Substance of the Womb, from compact, becomes very spongy, which is by the Dilatation of those Sinuses and Cavities, § 8, 9, 10. which before were exceeding small, as may be seen by comparing *Tab. III. Fig. 1. Lett. g, h*, with *Tab. IV. Lett. e, e, e, k, k, k*.

Thirdly and Lastly, As there is an Obstruction of the *Menses*, in general, after the first Conception they seem to be employed in this Distention, above what the *Fætus* uses; because there appear Blood-Vessels in the external Surface of the Womb, after Impregnation, that increase to the Size of a Swan's Quill, which did not appear at all before Impregnation; and which, after Delivery of the Woman, gradually decrease in Bulk, and disappear again, when the Womb is reduced to its proper Size.

§ 13. The true Structure, Origin, Insertion, and Use of the Appendices (commonly, though improperly, called Ligaments) of the Womb, are as necessary to be

be known as other Things, as we shall find in the Sequel.

The *Peritonæum* is that Membrane, which envelopes all the Parts contained in the Cavity of the *Abdomen*, and envelopes also the Womb in the *Pelvis*, in a kind of membranous Bag or Duplicature. This Portion of the *Peritonæum*, which envelopes the Womb, forms naturally, on its lateral Edges, two large Prolongations, or Duplicatures, improperly called the *Ligamenta Lata*, *Tab. III. Fig. 1. Lett. n, n.* These Prolongations are extended from each Corner of the *Fundus Uteri* (o), to the Sides of the *Pelvis*, dividing it into two Cavities (posterior, and anterior) and are afterwards continued in a loose Manner with the same *Peritonæum* to the Sides of the *Pelvis*; but are no way fixed to, or inserted in the *Ossa Iliæ*, as some have imagined. ‘*Ligamentorum Latorum beneficio Uterus non Offibus Iliis alligetur, ut perperam creditum est,*’ says DE GRAAF (p).

Each Duplicature, at its upper Edge, is subdivided into two small Distinctions, call’d *Alæ Vespertilionum*, or Pinions of the broad Ligaments. The anterior, which is the more raised, serves to connect the *Fallopian Tubes*, *Tab. III. Fig. 1. Lett. n, n.*, as the

(o) Winslow *Traité de Bas Ventre*, No. 69. p. 622.
(p) P. 269. Winslow, *ib.* p. 622.

Mesentery does the Guts: The Posterior contains the *Ovaria*, *Tab. III. Fig. 1. Lett. m, m*, in the same Manner as the Umbilical Vein is contained in the Ligament of the Liver. Hence we see, those Prolongations of the *Peritonæum*, improperly called, Broad Ligaments, cannot serve as a *Suspensorium* to the Womb, when Women lie on their Backs; and it is as evident, that they cannot prevent the Womb from inclining to the one Side, or the other. This any Person may be convinced of, by introducing his Hand immediately into the *Uterus*, either before or after the Extraction of the *Placenta*; and he will find, that the then *Fundus* will easily move from one Side to the other, or backwards and forwards; but when the Womb is at its full Extent, with the Waters yet in it, it cannot incline so much to one Side or the other.

§ 14. The Vascular Ropes, improperly called the Round Ligaments, or *Ligamenta Tiretia*, run through the Duplication of these Broad Ligaments, *Tab. III. Fig. 1. Lett. o, o*, from each Corner of the Womb, just under the *Fallopian* Tubes, as far as the Opening of the oblique Muscles, through which they pass, and under the fleshy Substance of the Transverse Muscles, as ALBINUS says: ‘ Sub imo hujus Musculi (Transversi) margine dilabitur Funiculus Spermaticus in Viro, Ligamenta Uteri

‘*Uteri rotunda in Fœminâ*’ (q). They slide over the *Os Pubis* obliquely, and reaching the upper and middle Part of the Groin near to the *Clitoris*, they divaricate in Form of a Goose’s Foot, into several small Branches, whereof most of them are lost in the Fat; but some of them are inserted in the Membranes (as well as the Fat) which are continued over the upper and interior Parts of the Thighs (r). Hence arise, sometimes, those Pains, which pregnant Women complain of, in those Limbs.

These Ligaments are no more than a Bundle of Arteries and Veins, interwoven and connected together by a fine Cellular Membrane of the *Peritonæum* (s); which may be proved thus: Inject the Hypogastric Arteries, and you immediately fill these pretended Ligaments with the Injection, so as to give them intirely a Vascular Appearance: Likewise, if you make an Incision in any Part of the said Ligaments, and blow into it through a Tube, you will dilate the fine Cellular Membrane that connects them to a prodigious Size (t); and MORGAGNI says, that he has seen them distended with Blood to the Thickness of his middle Finger.

(q) Albini Hist. Musc. p. 288. (r) Astruc, Of the Diseases of Women, p. 7. Winslow No. 59. De Graaf, p. 272, 273. (s) Winslow, No. 619, Morgagni adv. Anat. IV. p. 49. (t) Splanchnol. du Garengot, p. 326.

From this Description of these Dupli-
catures and Vascular Ropes, improperly call'd
Ligaments, the Anatomical Reader will na-
turally conclude, *First*, That these Dupli-
catures, called *Broad Ligaments*, and which
lie in a loose Manner in the *Pelvis*, are
only contriv'd by Nature to support the
Ovaria, *Tubæ Fallopianæ*, and Blood-Ves-
sels of the Parts of Generation, which are
very numerous. *Secondly*, That the Vascu-
lar Ropes, called *Round Ligaments*, serve
only to maintain a free Circulation (as they
are no more than a *Congeries* of Blood-Ves-
sels from the same Trunk) between the in-
ternal and external Parts of the Woman;
for, as they take their Rise from each Cor-
ner of the *Fundus Uteri*, and as they are no
more than a Number of Blood-Vessels con-
nected together by a fine Cellular Mem-
brane, and inserted and lost in the Fat of the
Groin (which cannot be called a fixed Point)
it is evident to a Demonstration, that they
are incapable of resisting the most insignifi-
cant Force; and, consequently, can never
support the Weight of the *Fœtus* in the
Womb, that it might not press too much
on the *Vagina*, Bladder, or *Rectum*, as
OULD asserts (*u*). If they are of any Use
in guiding the Womb, it can only be, to
prevent the Womb from twisting round,

(*u*) *Midwifry*, p. 17.

when not pregnant; which a small Force can do, especially as the Ligaments are fixed to each Corner near the *Fundus* or broadest Part of the Womb, as it then is, before the *Ovum* is impregnated.

§ 15. I observed before, § 13. That the posterior Duplicature of the *Peritonæum*, which helps to form the *Ligamenta Lata*, contains the *Ovaria*, *Tab. III. Fig. 1. Lett. l, l*, which are two whitish, Oval Bodies, one on each Side, a little flat, with their Surface unequal, *Tab. III. Fig. 1. Lett. m, m*, *Fig. 3.* and, as it were, wrinkled in old Women, but smooth in young. Their Fabrick is hard to be described, being composed of Arteries, Veins, Nerves, and Abundance of Lymphatics variously interwoven; among which are placed the *Ova*, all enveloped as abovementioned.

These *Ovaria*, in young Girls before Puberty, are small in Proportion; but, as that advances, grow sensibly larger, till they arrive at their full Size; and then, as Old Age advances, they wither and shrivel up.

§ 16. The *Ova* are very small Bodies, *Tab. VIII. Fig. 1.* of an uncertain Number, not only covered by the Integuments of the *Ovaria*, as abovementioned, § 15. *Tab. III. Fig. 1. and Fig. 3. Lett. a and b*, but are also fastened therein by a great Number of exceeding minute Vessels, whose *Vestigia* may be seen in the *Ovaria*, just after the
Separa-

New System of Midwifry. 35

Separation of these Vessels; they proceed out of the Side of the *Ovum*, and afterwards form the *Placenta*, § 17. when in the Womb. They are also composed of two Integuments containing a pellucid Liquor, which congeals by Boiling, or by any Heat a little greater than that of the human Body, and in every Respect seems to resemble and have the Properties of the White of an Hen's Egg. After the *Ovum* is impregnated, and gone out of the *Ovarium*, there remains a *Cicatrix* in the Integuments thereof; so that a Person, by examining the *Ovaria* carefully, may often find how many of the *Ova* have been impregnated.

How the *Ovum* is impregnated, how it breaks through the Integuments of the *Ovaria*, and how it gets into the Womb, is not yet sufficiently demonstrated; but that it passes through the *Tubæ Fallopianæ*, as well as the *Semen Masculinum*, is evident, as RUYSCH (*w*), MORGAGNI (*x*), DE GRAAF (*y*), HARVEY (*z*), and others have found.

From the Time of Conception, the *Ovum* is observed to swell, *Tab. III. Fig. 3. Lett. a*, and burst out of the *Ovarium*, and is then supposed to be received by the *Tubæ Fallopianæ*, and transmitted into the

(*w*) Thef. 6. p. 15. (*x*) Adv. IV. p. 79. (*y*) De Mul. Org. p. 292. (*z*) De Gener. Anim. Exerc. 64.

Womb (*a*), leaving its third Membrane, which is very thick in the *Ovarium*, tinged with Blood through the Whole of its Concave Surface, whence the loose Vessels of the *Ovum* seem to have been separated with Violence (*b*).

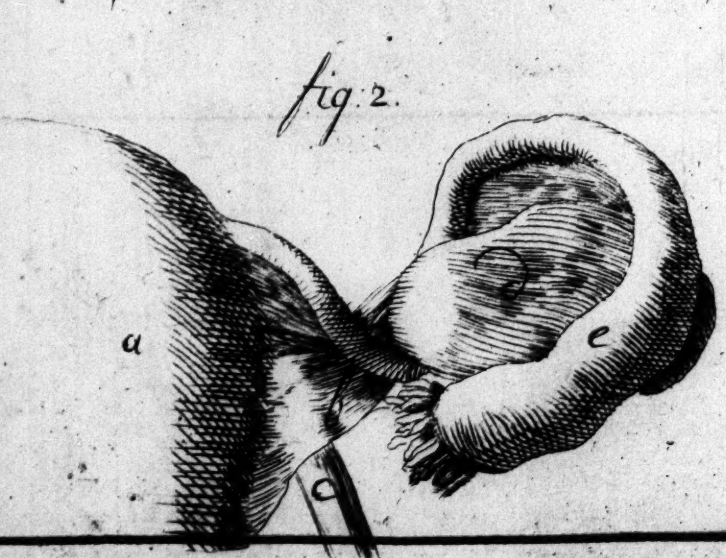
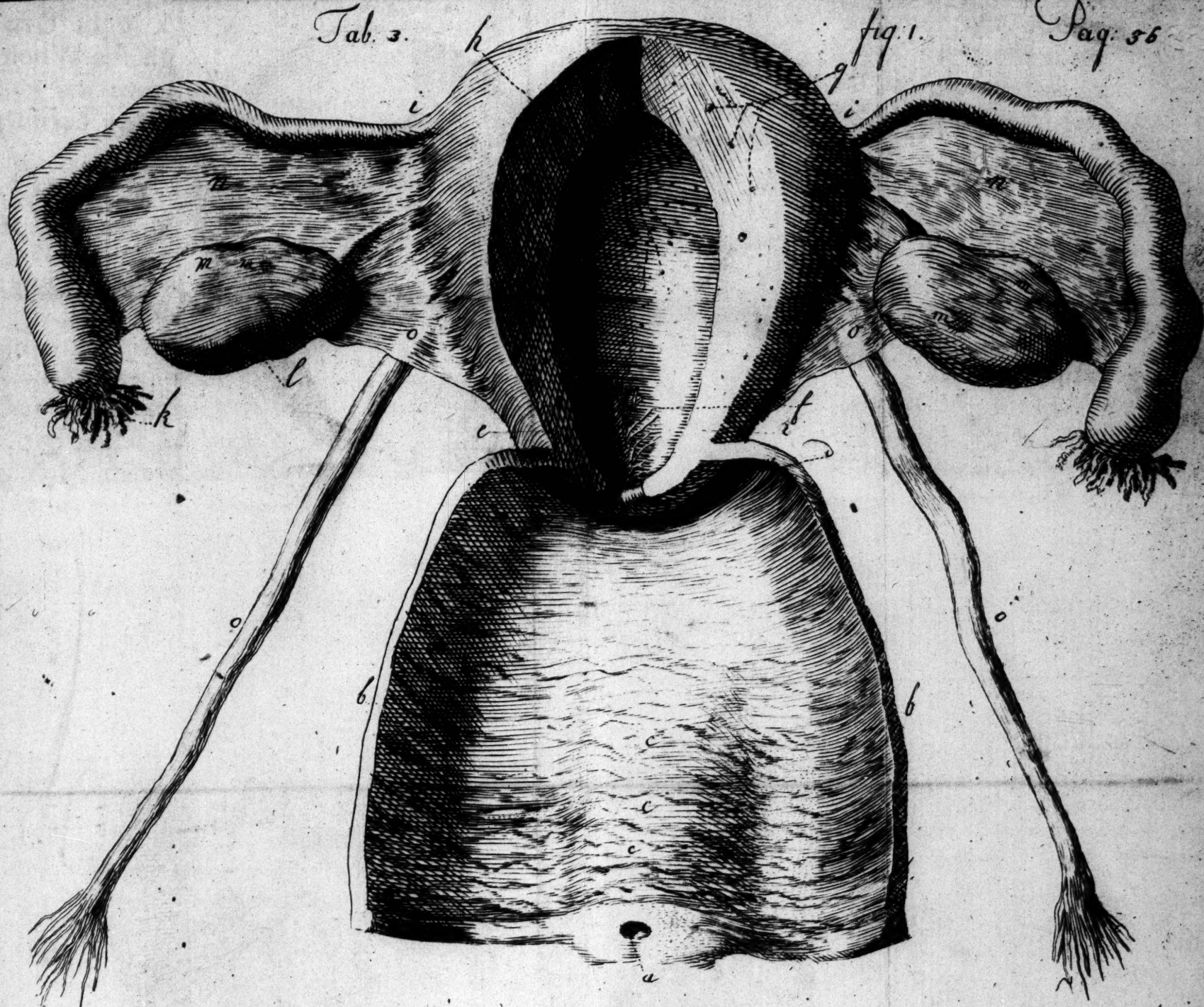
T A B. III. IV. and V. Explain'd.

Tab. III. shews the Womb of a Person not pregnant, with Part of the *Vagina*, which is cut open longitudinally on the Back, or that Side next to the *Rectum*.

Fig. 1. *a*, *Meatus Urinarius*. *b, b*, The Side of the *Vagina*, where cut. *c, c, c*, The *Rugæ*, or inner rough Membrane of the *Vagina*. *d*, The *Os Uteri*, or *Os Tincæ*. *e*, The *Cervix Uteri*, or Neck of the Womb. *f*, *Morgagni's Valves*. *g*, The Sinuses, or Cavities in the Substance of the Womb. *h*, The Orifices in the *Fundus Uteri*, which convey the Blood into the Cavity of the Womb from the Sinuses, *g*. *i, i*, The *Fallopian Tubes*, where they enter the *Uterus*. *k, k*, The *Fimbriæ*. *l, l*, The *Ovaria*, whose Surfaces are unequal by the Protuberance of the *Ova*. *m, m. n, n*, The *Ligamenta Lata*. *o, o, o, o*, The *Ligamenta Rotunda*.

(*a*) De Graaf, p. 310, 313. (*b*) Simpson's System of the Womb, p. 19. Ruysch Thes. 6. p. 17, 18, 25.

Fig.



Tab. 4. l

Pag. 36



New System of Midwifry. 37

Fig. 2. is the one Side of the Womb, with the *Ligamentum Latum*, *Ovarium*, and *Tubæ Fallopianæ*, twisted as here represented. Q. Whether this may not be one Cause of Barrenness in Women?

Fig. 3. is the *Ovarium* cut open, wherein an impregnated *Ovum* is cut thro', *Lett. a.*

Tab. IV. represents the Womb of a Person who died undelivered at her full Reckoning, being by a Scale the fourth Part of the Size of Nature.

a, a, a, The Inside of the Womb, soft, tender, something spongy and downy; to which the *Chorion* softly adhered.

b, b, b, The Parts to which the *Placenta* adhered. *c, d.* The Veins being inflated, these Parts seemed more unequal, as the *Canales Venosi* were swelled with Wind.

e, e, e, Some of the *Foramina*, which convey the Blood from the Sinuses *k, k,* into the Womb.

f, g, b, The Arteries of the Womb, which, being inflated, appeared under a thin Membrane, and were open at *g*. There are but a few here described, although there are Abundance in this Part of the Womb, some appearing as at *b*, and seemed to be conglomerate.

i, The Valves of the Neck of the Womb, *k, k, k, k,* Sinuses, or Cavities, into which several Arteries open themselves; and these Cavities open again into the Womb, as at

e, e, e; some of these Sinuses have five or six Orifices opening into them from the Womb.

l, l, That Part of the Womb, where the *Tubæ Fallopianæ* enter, which, before Impregnation, seemed to be at the Corners of the *Fundus Uteri*, as in the last Table.

m, The *Os Uteri*. *n*, The *Vagina*.

Tab. V. Fig. 1. represents the Womb inverted, in order to shew the *Musculus Orbicularis Ruyschii*.

a, a, The *Fundus Uteri* of a lying-in Woman inverted.

b, b, *Musculus Orbicularis* of RUYSCH.

c, The prominent Cone of the *Fundus Uteri*.

d, Some very fine Circular Fibres.

Fig. 2, 3, and 4. are three different Sorts of Pessaries.

§ 17. The *Ovum*, upon its Arrival at the *Fundus*, is somewhat spherical (*c*), and very little, in respect of the Capacity of the Womb (*d*), § 6. *Tab. III. Fig. 3. Let. a. Tab. VIII. Fig. 1. Lett. a*, and continues there to float, for some Days, amongst the *Semen Masculinum* (*e*), which is found in the *Uterus* and *Fallopian Tubes* (*f*). The Vessels, by which the *Ovum* seems to have

(*c*) De Graaf, p. 262. (*d*) Ruysch, Thes. Tab. 1. Morgagni Adv. V. Tab. 3. (*e*) De Graaf, p. 263. Ruysch, Thes. 3. No. 25, 38, 58, 69. Thes. 4. No. 91. (*f*) Ruysch, Thes. 6. p. 15.

fig. 1.



fig. 2.

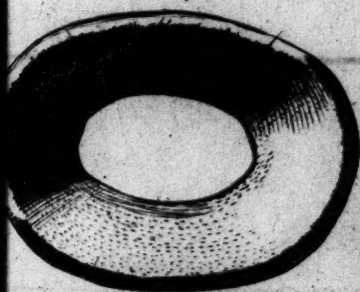
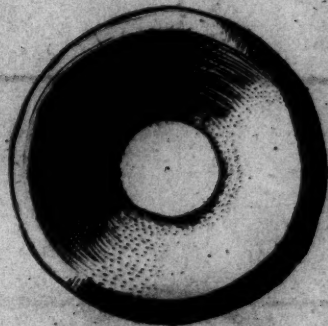


fig. 3.



fig. 4.



9
5

✓

adhered to the *Ovarium*, at first appear like a Cloud on the external Coat of the Egg, and then, becoming more fibrous, discover the Rudiments of the *Placenta* (g). After the *Ovum* has been somewhat longer in the Womb, and arrived at a proper Bigness to come in Contact with the *Fundus Uteri*, to which it is nearest placed by the *Fallopian* Tubes, its tender Vessels then begin to adhere to the *Fundus Uteri*, and to form the *Placenta*, *Tab. VIII. Fig. 2. Lett. b*, where its fibrous Parts, at one of its Extremities or Sides, seems to become membranous, and to make the Bag (b), *Tab. VIII. Fig. 2. Lett. a*. This membranous Part turns still larger and larger, in respect of the Fibrous (i); so that in the last Months, we find it vastly larger in Surface, than the fibrous Part or *Placenta*; whereas these Figures, *Tab. VIII. Fig. 2. Lett. a* and *b*, (to which I refer) shew, that at first the fibrous Part, or *Placenta*, was by far the largest. RUYSCH (k) was always surpris'd at the Largeness of the *Placenta* or Fibrous Parts in the first Months; tho' the Strangeness of the Sight made him think that it was only accidental; and DE GRAAF (l) was no less surpris'd with the early Bulk of

(g) Ruysch, Thec. g. Repos. 3. No. 7. (b) Ib. Thef. 6. F. 2. T. 1. (i) Ib. Tab. 1. Fig. 3. & 5. Tab. 2. Fig. 4. & 5. (k) Adv. Anat. Dec. 2. p. 29; Catal. rarior. 170. Thef. 6. p. 59, 78. (l) P. 294.

the *Placenta*, which he found frequently in the first Months, surrounding the whole *Fœtus*; and others were at so great a Loss what to make of it, in these Cases, that they took it to be a Mole: And SIMPSON (*m*) has examined *Placenta's* about the second Month, at which Time he found them exceeding large, and as genuine as when at the ninth Month. If I may be allowed to explain this better, I shall do it by comparing an *Ovum*, as above, to an Hedge-hog; for an *Ovum* in the Womb, when a little increased in Bulk, may be said to represent it, as only its small Vessels appear round it like Fibres, in the same Manner as the prickly Skin of the Hedge-hog, when he is wrapped up in it: But, when the *Ovum* is yet more extended, then one Part of it seems to open and be distended as a membranous Bag, in the same Manner as the Hedge-hog can put out its Feet and Belly. The Use of this Contrivance is evident; for, as the *Placenta* must adhere to one Part of the Womb, and that generally to the *Fundus*, it was necessary some other Part should be capable of Extension, in order to fill up the Cavity of the *Uterus*, while it was extended, as Pregnancy advanced. That the Reader may have some Idea of

(*m*) System of the Womb, p. 22.

the Proportions betwixt the *Placenta* and an Embryo in the early State of Pregnancy.

I have had one (which I now have by me) engraved, and it appears as represented in *Tab. VIII. Fig. 15.* *a*, shews the Fibrous Part, or *Placenta*; *b*, the Membranous Part, or Bag; *c*, the young Embryo.

§ 18. This *Placenta*, § 17. at its full Growth, and when there is only one, is commonly about eight Inches Diameter, being of a round Figure in general, and about one Inch and half thick at its Middle; but grows thinner towards its Circumference; It is composed of infinitely small Blood-Vessels, both Veins and Arteries, branched out from the *Funis Umbilicalis*, *Tab. VI. Fig. 1.* Some of these, at *d*, *Fig. 1.* seem to enter the Substance of the *Placenta*, but all the rest run through the *Chorion*, as it were through so many *Vaginae*, till they come near the Circumference, when they strike into the Substance of the *Placenta*, after various Inosculations, *Tab. VI. Fig. 1. Lett. o, o, o, o, o.*

That Side of the *Placenta* next the Womb, *Tab. VI. Fig. 2.* is covered with a fine membranous Continuation of the *Chorion* (*n*). The Extremities of these small

(*n*) Ruysch. Thes. Anat. 11. Affer. 4. No. 18. Not.
1. Thes. 5. No. 41. Santor. Obs. Anat. cap. 11.
§ 11.

Vessels pierce this Membrane, and shew their small Orifices on its Side next the *Uterus*, and therefore it is compared to the villous Coat of the Intestines(o). RUYSCH(p) says, the Extremities of the Vessels of the *Placenta* come nearest to the Cortical Substance of the Brain of any, and that he never met with any *Viscus*, whose small Branches were in greater Plenty than in the *Placenta*; and that their Extremities are *Tomenti instar*. Hence we see, there is so great a disproportionate Size of the human Uterine Sinuses and their Excretory Canals, § 7, 8, and 9. to the very small extreme Umbilical Vessels, that there can be no *Anastomosis* by continued Canals, nor any Inosculation between the Vessels of the Womb and *Placenta*, § 27.

In general, there is but one *Placenta* to one Child; yet it frequently happens that there are Twins which have only one *Placenta* in common to both; and BARTHO-LIN, in his *Epist. Med. Cent. iii. Epist. 62.* says, a Woman miscarried of three Children, who had only one *Placenta* in common to all of them: But nevertheless, in general, where there are Twins, they com-

(o) Ruysch, Thes. 5. No. 41, 57. Thes. 6. No. 65. Rohault Memoires de l'Acad. des Sciences, 1714 & 1716. (p) Thes. 2. Aller. 4. No. 2. Thes. 4. No. 69. Thes. 6. No. 65. Thes. 9. No. 38, 57. Thes. 10. No. 56, 58, 67.

monly have each a distinct *Placenta*, as is represented in *Tab. VII.*

§ 19. These Vessels, § 18. are branched out from one Vein and two Arteries, *Tab. VI. Fig. 1. Lett. m, n.* The Umbilical Vein, in some, is large enough to receive the little Finger: It enters the *Abdomen* of the *Fœtus* at the Navel, and goes directly into the Liver, where it discharges itself into the Sinus of the *Vena Porta*; whence, by a particular Canal, it is carried, in Part, to the *Vena Cava*, which conveys it to the right Auricle of the Heart; and then the greatest Part is conveyed into the left Auricle by the *Foramen Ovale*.

The *Aorta Descendens*, after its Bifurcation, ends in two large lateral Branches, named *Arteriæ Iliacæ*, about three Fingers Breadth from the Origin: Each Iliac is subdivided into two secondary Arteries, the one External, the other Internal: The External retains its Name of Iliac; the Internal is called Hypogastric, from which arises the Umbilical Arteries (*q*); or from the Extremity of the *Aorta*, as MORGAGNI says. They ascend, one on each Side the Bladder, to the *Umbilicus*, where they join and form a kind of Triangle, whose Basis is the Hypogastrics, and Summit the Navel; whence they go spirally round the Umbili-

(*q*) Winslow *Traité des Arteries*, No. 239.

cal Vein till they enter the *Placenta*, *Tab. VI. Fig. 1. Lett. m, d*, as above described, § 18. passing through the Tube made of the *Chorion* and *Amnion* (r). There are Anastomosing Canals, by which these Arteries and Vein communicate; as may be seen by injecting Liquor into the Umbilical Arteries of any Creature, § 27. These Umbilical Vessels discover themselves almost as soon as the Embryo can be observed (s), *Tab. VIII. Fig. 3, 4*. The Cord is about two or three Feet in Length, but varies in different People, thereby occasioning difficult Births, as I shall shew in the Sequel. It has no Nerve, and is therefore void of all Sensation. The harder and more rigid it is, the greater is the Danger of breaking it, by pulling in order to draw out the *Placenta* after the Birth of the Child.

Though one Umbilical Cord is only common to each Child, yet CORNELIUS STALPART VANDER WIEL (t) mentions a Child which had two Navel-strings and two *Placenta's*. And SCHURIGIUS (u) says, A Child was born, in *May, 1708*, 'Ex cujus unico Umbilico duæ chordæ Umbi-

(r) Ruysch Thef. 11. Affer. 4. No. 18. Morgagni Adv. IV. p. 85, 86. (s) Harvey Exercit. 56.

Ruysch Thef. 6. No. 43. not. 1, 2, & sparfim. Riordan. Anthropol. Lib. 6. cap. ult. (t) Obs. rar. Centur.

prior. Obs. 75. Schol. p. 332. ex Ephemer. Germ. (u) Embryolog. p. 96.

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fig. 1.

Tab. 6.

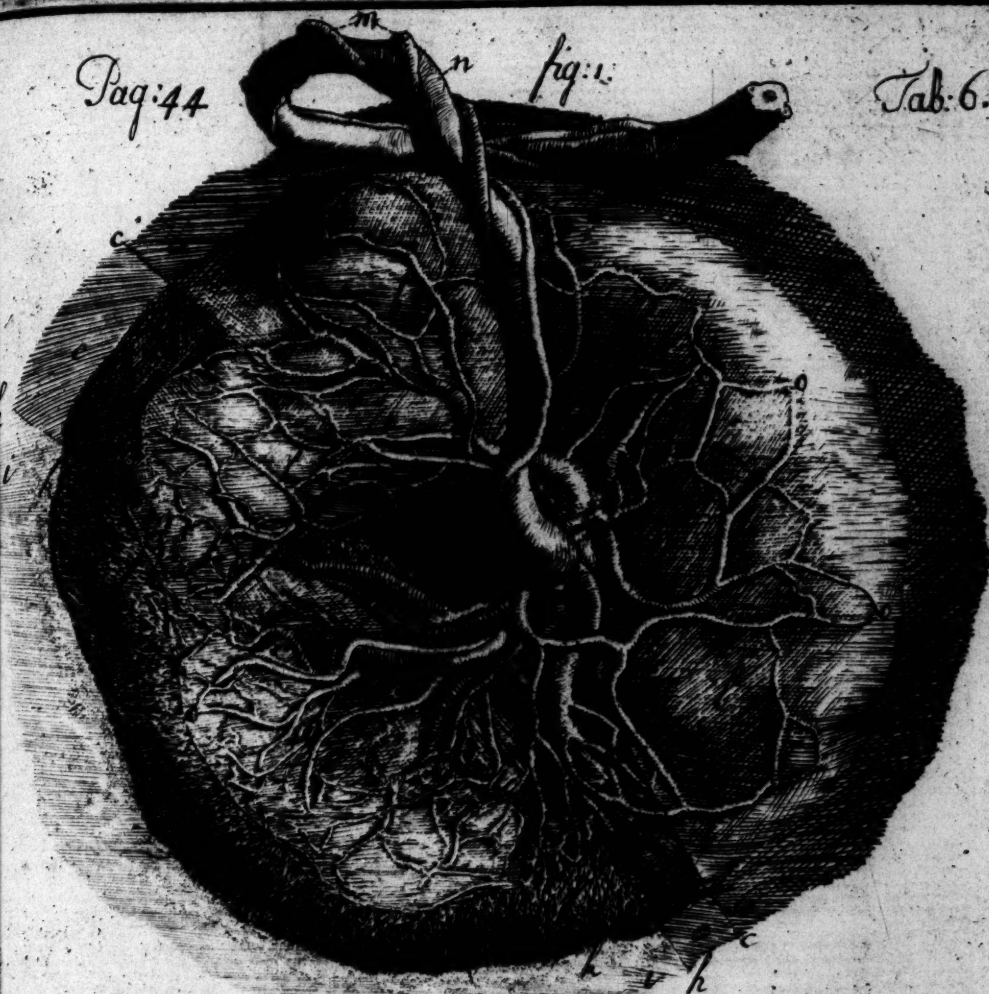
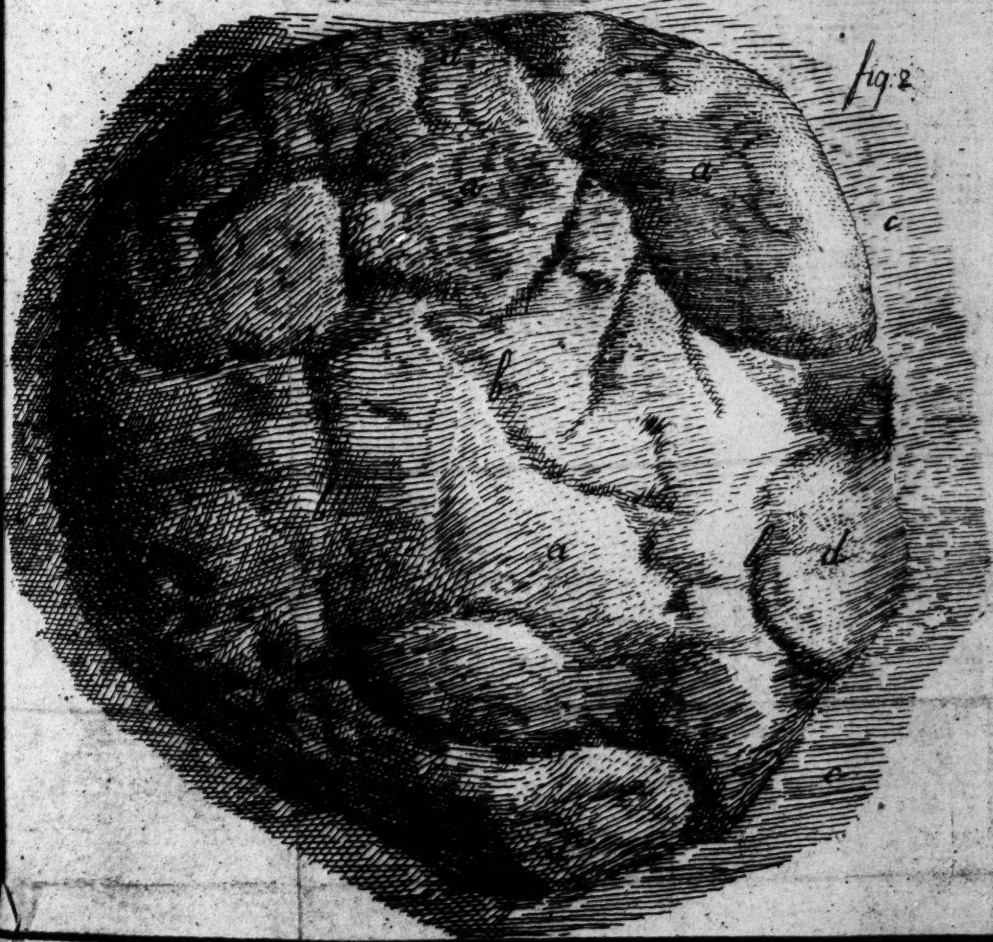


fig. 2.



‘*licales cum duplici Insertione in Placenta tam prodierunt.*’ And STALPART (*w*) says,—‘*De Geminis, quorum singuli quidem utebantur Umbilicali Funiculo, & tertio insuper communi erant donati.*’ The Thickness of the Cord often varies as well as its Length, *Tab. VIII. Fig. 5, 6, 7, 8.* which, I doubt not, may often occasion the Death of the Embryo.

TAB. VI. and VII. *Explained.*

Tab. VI. Fig. 1. shews the Side of the *Placenta* next the *Fætus*; whereof one Part shews the *Amnios* as it should be, at *a, a, a, b, b, b, b*; but at *c, d, d, c*, it is cut off to shew the *Chorion*; it adheres strongly to the Umbilical Cord at *d*; *e, f, g*, is the *Chorion* left naked, after taking off the *Amnios*.

b, b, b, b, The *Chorion* is taken off, to shew the interior Part of the *Placenta*.

i, k, l, The *Involucrum Membranaceum*, remaining after the *Chorion* is taken off; the Part *k* being thicker and more dense towards the Edge of the *Placenta*, and is unequal on its Surface, by small Masses adhering to it. *m*, The Umbilical Arteries. *n*, The Umbilical Vein. *o, o, o*, The Part of the *Placenta* where the chief of the Branches of the Vein and Arteries enter, after various Inosculations.

(*w*) *Ut supra, l, a, p. 329.*

Fig.

Fig. 2. represents the Side of the *Placenta* which adheres to the Womb.

a, a, a, a, The Parts which project the most. *b, b, b,* The Furrows, which seem to divide the *Placenta* into different Parts, occasioned by the *Placenta* becoming a Segment of a larger from a small Circle. *c, c, c,* Part of the *Chorion*, on which appear the little Substances, as in *Fig. 1. Let. k.* *d, d, d, d,* The Parts of the *Placenta* which adhere strongest to the Womb, being opposite to where the Vessels enter the *Placenta*, at *o, o, o,* *Fig. 1.*

Tab. VII. represents two *Placenta's* belonging to Twins.

a, shews the Membrane of one *Placenta* distinct from the other.

§ 20. The *Fœtus in Utero* swims in a Liquor, which is contained in a Bag called the *Amnios*, over which is the *Chorion*. The *Amnios* is much thinner than the other, is perfectly transparent, and has numerous Ramifications of the Umbilical Vessels spread upon it (*x*). The Orifices of the lateral Branches of the Arteries pour out the Liquor into its Cavity; as is demonstrable by Injection, § 27. For, inject Water into the Umbilical Arteries, dry the interior Surface of the *Amnios* well with a Cloth or

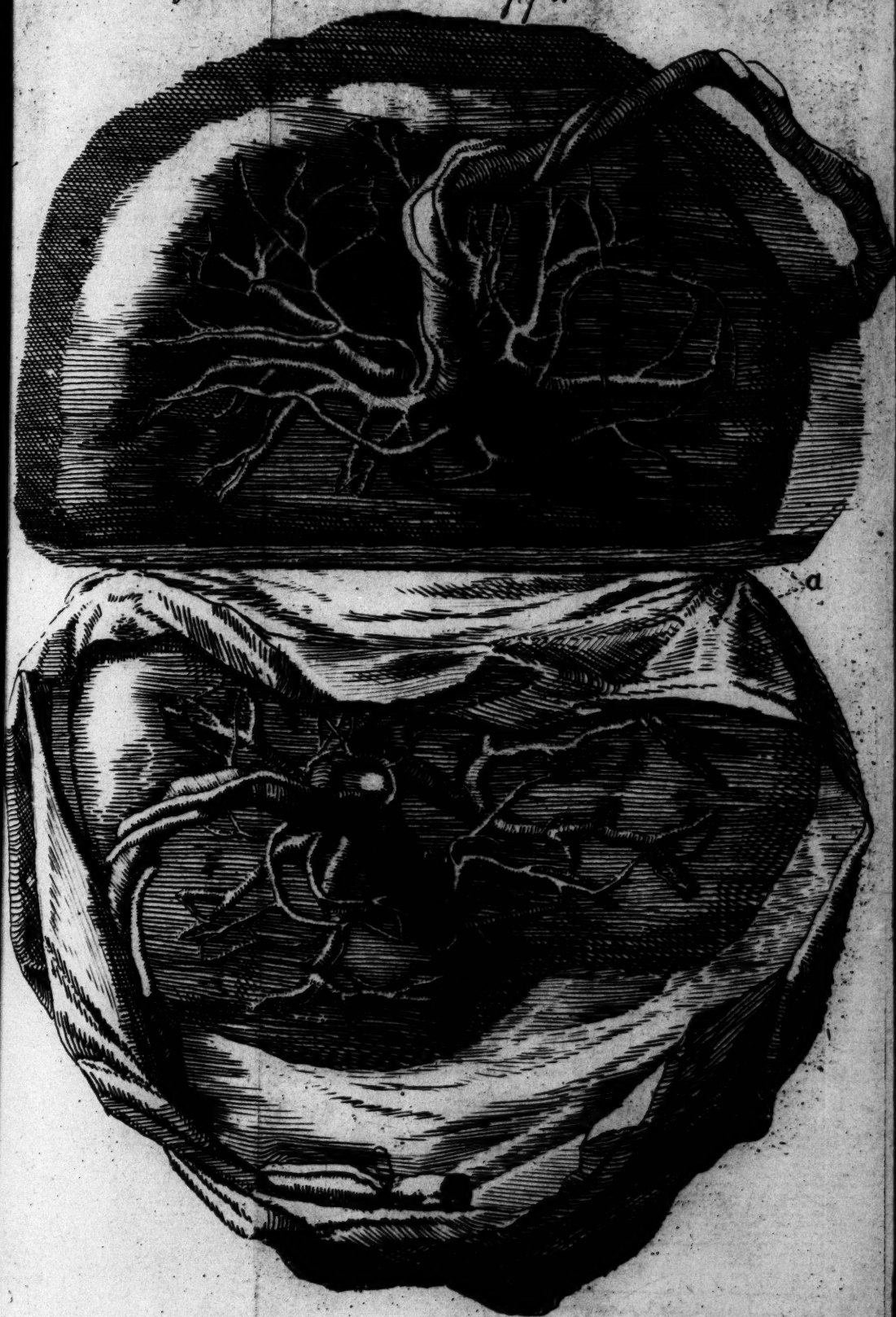
(*x*) Needham de Form. Fœtus, cap. 3:

Sponge ;

Pag. 46

fig. 1.

Tab. 7.





Sponge; then press the Membrane gently, or continue the Injection, and the Water may be seen coming out on that Surface, in the Form that we see small Drops of Perspirable Matter come out on the Surface of the Skin at the Finger Points, when we press the Finger hard, or have a String tied round it; which Experiment Professor MONRO repeated several Times at *Edinburgh* (y); and I have frequently shewn it here at *York*.

§ 21. Hence we find, that the Liquor contained in the *Amnios*, § 20. is either wholly separated from the Vessels of that Membrane, § 27. or it is furnished, partly from them, and in Part from the *Fætus*. For, did it come any way from the Womb, and did the *Chorion* and *Amnios* only serve as Strainers to this Liquor, some of it would always be found in the Cellular Substance, § 22. between them, which is never the Case; and if it did go in, What should hinder it from running out again?

This *Liquor Amnii* is in larger proportional Quantity, the younger the *Fætus* is; which seems to be very Providential, because, the younger the *Fætus* is, the more Danger there is of its being hurt by any outward Pressure; and at the same Time it extends the Bag, so as to fill up every Space

(y) Med. Essays, Vol. II. Art. 9.

in the Womb, as it alters in Shape; and the Reason of its being in greater Quantity at this Time seems to be, because the Embryo, being then weak, cannot absorb so much of it as when more strong, § 24. which accounts for there being less Water, in Proportion, a little before the Time of regular Labour: And, did the Waters increase in Proportion as the Bulk of the Child increased, the Woman's *Abdomen* would scarce contain it. Since, therefore, we can demonstrate Veins also on the *Amnios*, and seeing the Veins of all other Membranous Bags, that have Arterious Canals throwing Liquor into their Cavities, are endowed with an absorbing Power, and take up Fluids from the Cavities, we may reasonably conclude, that the Veins here are the same Way employed, § 24 (z).

§ 22. The *Chorion* envelopes the *Amnios* and the *Alantois*; it is thicker and more opaque than the others; rough on its Surface next the Womb, to the Inside of which it is contiguous, while whole, excepting the Space which the *Placenta* takes up, and has several Blood-Vessels visible to the naked Eye. The *Chorion* and *Amnios* have a loose Connection by a Cellular Membrane, except where the *Alantois* interposes. The *Alantois*, MONRO says (a), is a fine transparent

(z) *Monro's Med. Ess. Vol. II. Art. 9.* (a) *Loc. cit.*
Mem-

Membrane, but he could not find any Cavity or Liquor in it.

§ 23. Both *Chorion* and *Amnios* seem to be Productions of the *Cutis* and *Cuticula*, which immediately envelopes the *Fœtus*; for the *Cuticula*, which is the outward and thinner Membrane of the Child, runs along the *Funis Umbilicalis*, § 19. as far as the *Placenta*, and then turns back and forms the inner Integument of the Bag called the *Amnios*, which is thinner than the *Chorion*, § 20. The *Cutis* or inner Integument of the Child, in like Manner, goes along the *Funis Umbilicalis*, § 19. which it immediately envelopes, and covers all the other Integuments, except the smallest Vessels of the *Placenta*, § 18. and is then called the *Chorion*. These two form what is called the Bag, which, if too thick and strong, may render Births more troublesome; and, if very weak and thin, may break too soon, and let out the Waters.

§ 24. It may be proper, in this Place, to explain what is meant by Absorption, that these Things, § 21. may be easier understood. Absorption, then, is that Power, by which the small open Orifices of Vessels imbibe Liquors lodged in the Cavities of the Body, and is observed to increase or diminish, proportionably to the Strength or Weakness of the Creature.

In Diseases, where the Contraction of the Vessels is too great, as in most of those called *Acute*, there is scarce as much Moisture in the Cavities of the Interstices of the Parts, as allows them to slide easily one upon another. In Health, the Quantity of such Liquor is moderate, and a pretty constant Equality is kept between the Action of the Exhalants and of the Absorbents. But, when the Body turns weak, the Exhalants pour out so much more than the Absorbents can take in, that all the Cavities are found to contain considerable Quantities of Liquors. After Death, the Action of the Absorbents seldom, if ever, can be supplied by any Mechanical Pressure.

For Examples of these Things, consider the common Phenomena which are to be observed in the long Alimentary Tube; in the large Cavities of the *Abdomen*, *Thorax*, *Pericardium*, &c. and in the smaller Cavities of the *Tunica Cellularis* every where, of the *Cornea*, &c. both in a sound and in a morbid State. Hence we see how Purgatives, or Diuretics, may serve to drain off extravasated Hydropic Waters, by stimulating the Vessels to a stronger Absorption; and also how Corroborants produce the same Effect, though more slowly. Hence also we can account why, the stronger and more healthy the Child is, *ceteris paribus*, the closer the
Placenta

Placenta adheres, and the less Water there is in the Bag, & *vice versa*: For Proofs of which, any Person may consult MAURICEAU, LA MOTTE, and other Observators, who, although they have not mentioned this Reason, yet the Reader will find, that where the greatest Quantity of Water is contained in the Membranes, the Child is very small and feeble; LA MOTTE, 329. and in many other Places.

§ 25. From what has been said, § 21, 24. we may reasonably conclude, That the young Embryo in the *Ovum*, newly got into the Womb, is, by Absorption, supported for a little Time by the *Semen*, § 17, 18. and what other Humours there may be in the Womb, and then the Vessels of the *Placenta*, increasing in Bulk and Strength, by their Suction, not only supply the Embryo with Nourishment, but also, by this Means, are drawn to that Part of the Womb, whence the Humours flow to supply them, and thereby draw the Blood towards the Womb; this mutual Pulling always turns the tender Vessels to the *Fundus Uteri*, either fully so, or a little on one Side; which sometimes happens, as I have frequently found; as I mentioned in *Observ. II.* § 10. *Observ. III.* § 30. This Suction also helps to make the *Placenta* adhere the closer to the *Uterus*.

I must observe to the Reader, That although the *Placenta* may adhere to one Side or other, it yet may be properly said to stick to the *Fundus Uteri*; for, supposing an impregnated *Ovum* to adhere to the *Fundus Uteri*, near to one of the *Fallopian Tubes*, in the Condition the Womb is in, as in *Tab. III. Fig. 1.* Then, when the *Uterus* should be extended, as in *Tab. IV.* the *Placenta* would be found to adhere on one Side betwixt *l, l*, and the very End or Bottom, which is then opposite to the *Os Tincæ*, *Tab. IV.*

§ 26. From what has been said, § 7, 8, 9, 16, 17, 18, 20, 21, 22, 24, and 25. we find, that the Child, by these Means, can have no more Liquors forced upon it, than it requires, or can consume; but, was its Circulation to depend upon the Mother's Pulse, it would be affected as her's, whether too quick and strong, or too slow and languid: For the Progressive Motion, communicated to Liquors by the Power of Absorption, being slow and weak, and no external, alternate Pressure, having any considerable Effect in increasing the *Momentum* of the Liquors moving in the Vessels contained within the *Uterus*, it appears that the Blood, returning to the *Fœtus*, is pushed forward principally by the Force of the Heart and Arteries of the *Fœtus* itself; which

which is evident from the very Fabric of the Umbilical Chord, § 19. *Tab. VI. Fig. 1.* And that the Force of the Heart may be strong enough to drive forward the Blood in such a long Course as it must make in the Secundines; the *Canalis Arteriosus* is sent from the Pulmonary Artery into the Descending *Aorta*, whereby the Blood thrown out of the Umbilical Arteries is propelled by the united Force of both right and left Ventricle of the Heart; and these Arteries anastomose, § 19. with the Branches of the Umbilical Vein, by larger communicating Canals, than the Arteries and Veins commonly have in the other Parts of the Body (*b*). Hence the smaller Share by far, of the Blood sent out of the Umbilical Arteries, is returned to the *Uterus*, most of it being poured into the Umbilical Vein by these Anastomosing Canals, § 19. ROHAULT (*c*) calculates, that only one seventh Part of the Capillary Branches of the human Umbilical Vessels reach the exterior Surface of the *Placenta*. Hence also we see, the Secundines owe their Life and Action to the *Fætus* only; and why, after Separation from the *Fætus*, they cannot take up any more Fluids, as they cannot any longer absorb, § 24.

(*b*) *Monro's Med. Ess. loc. cit.* (*c*) *Mem. de l'Acad. des Sciences, 1715.*

§ 27. From the last Section, we find that the *Fœtus's* Blood mixes, in Part, with the Humours, which are sucked in, or absorbed from the Mother, something analogous to the Chyle's gradually mixing with the Blood, as it descends, before it gets to the Heart: And, on the other Hand, it does not appear, that the red Particles of the Woman's Blood are absorbed by the small Extremities of the Umbilical Vein; because the Smallness of the Orifices of these Vessels, § 18. seem incapable of doing that, and because of the Chylous Appearance of what is separated by the *Glandulæ* of Cows and Sheep; and, lastly, because we want Examples of the red Globules being naturally exhaled or absorbed in this Way in any other Part. VIEUSSENS (*d*) will by no Means allow any red Globules to pass from the Mother to the *Fœtus*, or from the *Fœtus* to the Mother; which is farther confirmed by MONRO (*e*), who injected a human *Placenta*, the Membrane of which, on the Side next the *Uterus*, was very intire. After he had forced out the Blood by macerating it in warm Water, and injected such Water by one of the Umbilical Arteries, he tied the other Artery and the Vein, by which the Water had returned; and then turning

(*d*) Dissert. de Struct. & Usu Uteri, &c. (*e*) Med. Ess. Vol. III. Art. 13.

the Villous Side of the *Placenta* uppermost, he injected more Water at the Artery in which his Pipe was fixed; the Water then ouzed out of such small Orifices of the Villous Surface, § 18. that they could not distinguish them; and it came out so slowly, that he had not Strength enough to continue to push the Sucker till the Syringe was near empty, though it contained only about eight Ounces of Liquor. He afterwards pressed the Water out of the Vessels, as much as he could, and injected Oil of Turpentine coloured with Vermillion, which returned by the Vein of a fainter Colour than it was in the Arteries; he could make very little of it ouze out at the Villous Coat, and what did come out was not the least tinged. The coarser Injection, being afterwaads thrown into one of the Arteries, filled both, but did not return by the Vein, which he filled with the green Injection. The same Sort of Injection I have frequently repeated before Company. This Experiment confirms what is said in § 18. and nearly proves the Calculation of ROHAULT to be just, § 26.

If it should be asked, then, Whence has the *Fætus* red Blood? I answer, From the same Source that Chickens *in Ovo* have theirs; which must be from no other than the Action of its own Heart, and of the Vessels of its own Body and Secundines.

§ 28. From what has been said, § 24, 25, 26, 27. we see, That as the Liquors sent into the *Fætus* by the Umbilical Vein, not having their propelling Force communicated from the Mother, the State of the Mother's Pulse cannot affect the Embryo or Child, otherwise than by occasioning Abortion, § 12, 132, 133, 134, 135, 136, 137. or by vitiating the Fluids, that are to be absorbed. Hence we may see, that some Children may be infected with the diseased Juices of the Mothers, while others escape them; for, if either the Diseases be topical, without affecting the whole Mass of Fluids; or even, when the Mother's Blood is vitiated, if the morbid Particles are such as cannot enter the Placentary Vessels, the *Fætus* will avoid the Disease.

§ 29. It is proved from Observations, that by Means of the Uterine and these Umbilical Vessels, § 18, 19. That the Mother supplies the Humours of the *Fætus*, which also returns others to the Mother: For *Fætuses*, whose *Placentæ* were not in the least separated from the *Uterus*, have been quite exhausted by the Mother's dying of an Hæmorrhage (f); and MONRO (g) has seen Chil-

(f) Mery dans l'Histoire de l'Acad. des Sciences, 1708, says: Une Femme grosse qui touchoit a son Terme, se tuë d'une chute tres rude presque sur le champ. On lui trouve 7 a 8 Pintes de Sang dans l-

Children pale and weak, by violent Flooding in Time of Labour; which I have frequently met with, in my own Practice.

§ 30. On the other Hand, we have an Instance of a Mother and Child being almost wholly drained of their Blood by the Midwife's neglecting to tie the Navel-string of the first of the Twins, which was brought forth without perceiving that the other still remained in the Womb (*b*).

This

Cavité de Ventre, & toutes ses Vaisseaux sanguines entièrement épuisés. Son Enfant étoit mort, mais sans aucune apparence de Blessure, & toutes ses Vaisseaux étoient entièrement vuides de Sang, aussi bien que ceux de la Mere. Le Corp de Placenta étoit encore attaché a toute la surface interieure de la Matrice, où il n'y avoit aucun Sang extravasé.

(*g*) Med. Ess. Vol. II. Art. 9.

(*b*) Une Paisante du Village de Montorot pres d'Illiers fut accouchée d'un Garçon vivant par une sage Femme qui ne puit la delivrer de l'arrierfaix, & l'abandonna 8 Jours apres l'accouchement sans avoir fait la Ligature au Cordon Umbilical qui sortoit de la Matrice. L'accouche qui perdoit tout son sang fut bientôt a la dernière Extremité, & on appella M. Guerin Chirurgien d'Illiers, qui a peine lui trouva encore quelque signe de Vie. Cependant en la touchant il reconnut avec certitude qu'elle avoit un second Enfant dans sa matrice, & il hazarda la tirer par les pieds. Il le tira vivant & c'étoit un Garçon; il delivra la mere de son arrierfaix qui *étant commun avec celui du Premier*, n'avoit pu sortir que les deux Enfants ne fussent sortis; & toute cette Operation fut si heureux, que la mere fut sauvée, & remise en état de coucher de nouveaux & qui

This and the last Section seem to contradict § 27. and to prove that the red Globules of Blood pass from Mother to Child, & *vice versâ*: But I shall take off the Force of this seeming Argument, by observing, *First*, That altho' *Fætuses* are sometimes pale and wan by the Mother's Hæmorrhage, yet it does not prove that red Globules were carried out of the *Placenta* into the Sinuses of the Womb; for a violent Diarrhœa will make a Person with a florid Complexion become very pale and wan, without discharging one Drop of red Blood; and his Pulse, from being full and strong, shall become weak and feeble.

Secondly, The Proof of a Mother and Child being almost wholly drained of their Blood by the Midwife's neglecting to tie the Navel-string of the first of the Twins is no stronger an Argument, than the last mentioned, to prove that red Globules might circulate betwixt the *Uterus* and *Placenta*. For, in the first Place, if there be only one

les deux Enfants ont parfaitement bien vecu. *Histoir. de l'Acad. des Sciences, 1727.*

And again: Pour ces deux petits Filles il n'y avoit qu'un *Placenta* dont les Membranes ne formoient qu'une Poche qui les renfermoit ensemble, ce qui est tres rare. De cette unique *Placenta* il ne sortoit qu'un Cordon, mais qui dans le milieu de sa Longueur se partageoit en deux, qui, alloient seperament se terminer a leur Nombril, ce qui nous n'avions point encore vu jusqu'ici Mery dans Memoires de l'Acad. des Sciences, 1720.

Placenta

Placenta in common to both (as we find by the Quotation was the Case) the Child might be drained in Reality of its red Blood, because the Circulation is carried on through the *Placenta* by the Child's own Pulse, § 26. And, in the second Place, the Mother might be drained by a Separation of Part of the *Placenta* from the Womb; which there was a strong Probability of, because it is expressly said, in the Quotation below, That the Midwife *could not bring away the After-birth*, and therefore left the Woman; so it is evident she had tried to do it; by which Force, no Doubt but the *Placenta* must have been in Part separated, whence this Discharge of Blood may be easily accounted for; and that That was really the Case, I am convinced from several Observations which I have made, but particularly from the following:

OBSERVATION III.

On the Eleventh of *June*, 1750, I was sent for to the Wife of one *Turner*, at *Riccal*, nine measured Miles from hence (*York*). At my Arrival, I found the Woman had been delivered of a living strong Boy, about nine Hours before I got there; and altho' the Midwife had not tied the Navel-string of the First-born, yet the Patient lost no Blood. I then delivered her of a strong
lively

lively Girl; both Children were as lusty as any I had ever seen, even when there was only one Child; which is not common. There were two After-births; the one adhering exactly to the *Fundus Uteri*; the other as near the first as possible, but inclining backwards.

From this Observation (the like I had taken Notice of before) I must conclude, *First*, That where there are as many After-births as Children, there is no Danger of the Mother's bleeding from neglecting to tie the Navel-string. *Secondly*, It proves, that upon the String's being cut from the Child, all Manner of Circulation ceases in the *Secundines*, according to § 26. which would not have been the Case, had there been only one After-birth common to two Children; because, though the Navel-string of the first was cut from the Child, yet, if the second was living, the Circulation might be continued through the *Secundines* by the unborn Child; which was the Case in the above Quotation; wherefore I would always advise the Midwives to make a Ligature on the Chord of the first-born Child, unless they deliver the Woman of the other immediately. This is confirmed by the Navel-string being separated in the *Uterus* before the Birth of the Children, § 33.

If my Patient here had lost much Blood, I should have been particularly careful to
examine,

examine, whether it had come through the Umbilical Vessels, or through the *Vagina*; which I would recommend to every Person's Observation, who may be called to a Woman in that Condition. Had I even found a Ligature on the Chord of the first Child, I would have cut the String above the Ligature, to see what Blood would follow. I might have been excused saying so much upon this Head, because the Experience of our greatest Practitioners in Midwifry tells us, that no Hæmorrhage happens at the Umbilical Vessels, upon breaking or cutting the Navel-string, except the little Blood in the Vein and Arteries of the Chord itself, which I have frequently remarked; therefore, when there is only one Child, there is no Occasion to tie the Navel-string at all, because the Secundines then become a lifeless Mass, § 26. (i). For the *Placenta* commonly separates in a shrivelled or suppurated State, soon after the Communication with the Child is destroyed. But, did the Vessels of the *Uterus* and *Placenta* anastomose, an Hæmorrhage would certainly follow at the Umbilical Vein, whenever the Navel-string was broken or cut, and would continue as long as the *Placenta* adhered to the *Uterus*; and if the Umbilical Vessels were tied, the Circulation would still be continued in the

(i) *Monro's Med. Ess.* Vol. II. Art. 9.

Placenta, and it would not become a lifeless Mass: Moreover, did these Vessels anastomose, the Violence of the Mother's circulating Fluids, § 26. would hazard the Destruction of the Embryo, while tender: And there would also be Vessels to be torn or broken at the Birth, which would require too much Force in bringing away the *Placenta*, and would even bring on Inflammations, Suppurations, and other bad Symptoms.

§ 31. Hence, from § 24. to § 30. inclusive, we find, That it is evident, that the Circulation is not carried on from the Mother to the *Fœtus*, nor from the *Fœtus* to the Mother, by continued Canals, but by the Extremities of the Umbilical Vein taking up Liquors by Absorption, in the same Way as the Lacteal Vessels do in the Guts; and the Umbilical Arteries pour their Liquors into the large Cavities of the Sinuses, *Tab. IV. Lett. e, e, e, k, k, k,* or other Cavities analogous to them: For the Uterine Sinuses seem to be to the *Fœtus*, what the Intestines are to an Adult: The Uterine Blood, poured into the Sinuses, being analogous to the recent *Ingesta* of Food and Drink: The Liquors sent from the Umbilical Arteries to be mixed with the Uterine Blood, resemble the *Saliva*, the Bile, Pancreatic Juice, and other Liquors separated from

from the Mass of Blood: The Umbilical Veins, and those on the Surface of the *Chorion*, take up the finer Parts of this compounded Mass, as the Lacteals and Meseraic Veins do from the Contents of the Guts: And the grosser Parts of the Blood in the Sinuses are carried back by the Veins of the Womb, as the Excrements of the Guts are discharged at the *Anus*. By this Means the *Fætus* is solely nourished, and thus the Circulation and Communication of the Humours betwixt Mother and *Fætus* are performed: All which seems to be confirmed by the following Observation, which I have a great many Times remarked in other Women.

OBSERVATION IV.

A Woman having brought forth a strong healthy Child, and the After-birth still adhering to the *Uterus*, I carefully introduced my Hand into the Womb immediately after the Birth of the Child; and, as gently as I could, separated so much of the *Placenta* from the *Uterus*, as to admit a Finger betwixt them; the End of which I put as near to the Center of the *Placenta* as I could; and then, in as gentle a Manner, I moved the End of my Finger from Center to Circumference, & *vice versâ*, to try if I could find which Part of the *Placenta* adhered the strongest to the Womb, and I always found the

the strongest Adhesion to be towards the Edge of the *Placenta*, marked *d, d, d*, in *Tab. VI. Fig. 2.* This Experiment I have frequently repeated in the Cases as above, and have always found them alike; but those who are desirous of making the same Experiment, must do it with great Care.

This Observation confirms, *First*, That the *Fœtus* is supplied with Humours by Absorption; and, *Secondly*, That towards the Edge of the *Placenta* the Absorbing Power is strongest; which seems to be accounted for by the Fabric of the *Placenta*; for the chief of the Vessels run along from the Center at *d*, *Tab. VI. Fig. 1.* and dip into the Substance at *o, o, o, o, o*, on the Part opposite to where the strongest Adhesion is.

§ 32. Many have been the Debates about the Manner by which the *Fœtus in Utero* receives its Nourishment, all which are fully treated of by the learned MONRO (*k*), to which I refer the Reader, but shall here mention what I think necessary for my Purpose.

Some have imagined, that the *Fœtus* must be nourished, wholly or in Part, by receiving Aliment by the Mouth, or some other Passage, into the Chylipoietic Organs, be-

(*k*) Med. Essay, Vol. II. Art. 9. Vol. III. Art. 13.

cause there is always something found in their Stomach and Intestines at the Time of Birth. But I shall prove this cannot be the Case, *First*, by bringing Instances, as recorded, of *Fœtuses* being nourished without any Probability of their receiving Aliment by the Mouth, or into the Chylopoietic Organs; and, *Secondly*, I shall prove, that the supposed Aliment is improper for Nourishment: Which being made appear, and no distinct unexceptionable Proof being produced, of their having ever been supplied with Nourishment without a Navel-string, it must be allowed, that the Umbilical Vessels are absolutely necessary towards the Nourishment of the *Fœtus*, and that the Mouth is not so; as I have shewn from § 17. to § 32.

First, then, There have been Children (*l*), a Whelp (*m*), and a Lamb (*n*), brought forth without Heads, or any Passage into the Chylopoietic Bowels: And I delivered a Woman in this City (*York*) on the Fourth of *January*, 1749, of a monstrous Child without a Head (*Tab. XVII. Fig. 1.*); and tho' in other Respects it was very lusty, yet its Stomach and Bowels were not twice the

(*l*) *Monro's Med. Ess. loc. cit.* Two, by *Litt.* *Memoir. de l'Acad. des Sciences*, 1701. One, by *Mery*, *ib.* 1720. (*m*) *De Graaf de Mul. Organ. cap. 15.* (*n*) *Antoine Hist. de l'Acad. des Sciences*, 1703.

Bulk of those of a Woodcock, which they greatly resembled, and were quite empty, *Tab. XVII. Fig. 3.* In other *Fætuses* that had Heads, all Passage to the Stomach was shut up, in those of Children (*o*), of Whelps (*p*), of a Lamb (*q*), of a Pig (*r*); and where the Passage into the Stomach has been open, there have been no Intestines (*s*); and where there were Guts, nothing could get down into them (*t*).

These Examples are so sufficient to prove the little Necessity there is either for a Mouth or Chylopoietic Organs, in the nourishing of *Fætuses*, that I need scarce mention how much they serve to demonstrate this Part of the Problem.

Some, who argue on the other Side of the Question, assert, That there are Instances, where Children have been born alive after the Communication by the Navel-string has been interrupted, and quote a Case related by Mr. PETIT (*u*), where 'The Navel-string of a human *Fætus* was shewn; which had a Knot in its Middle, and the Marks of the Parts that formed the Knot

(*o*) Littr. Mem. de l'Acad. des Sciences, 1701. Buchnerus Act. Med. Physic. Acad. n. c. Vol. II. Obs. 96.

(*p*) Littr. Mem. de l'Acad. des Sciences, 1703. Brady, Phil. Trans. No. 304. (*q*) Ruysch Thes. 4. p. 55.

(*r*) Bellinger de Foetu nat. cap. 9.

(*s*) Lemery Hist. de l'Acad. des Sciences, 1704.

(*t*) Calder's Med. Ess. Vol. I. Art. 14. (*u*) Hist. Mem. de l'Acad. des Sciences, 1718.

' could

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could be observed; which proves, that the Knot had been made long before the Woman's Delivery. But this Instance is defective; for Mr. PETIT does not say, whether this Knot stopped the Course of the Blood, or if it was any more than one of the common ones, about which Midwives make so much ado: But MONRO (w) proved, by his Injection's Passing, that Liquors will not stop in such, which resemble a Knot before the Injection is thrown in. Besides, it does not appear from PETIT, that the Knot was of long Standing, neither does he say, whether the Child was alive or dead: But this is in some Measure answered by MAURICEAU (x), DEVENTER (y), and other Practical Writers in Midwifry, which shew the Danger Children are in, of losing their Lives, when the Umbilical Chord is pressed, or exposed to the cold Air before Birth; and by Observations of *Fœtuses* being killed by Knots on the Navel-string (z).

§ 33. The next Observation, brought to prove the Course of the Blood interrupted in the Umbilical Vessels before Birth, is what HEISTER quotes from FRED. HOR-

(w) Med. Ess. Vol. II. Art. 9. (x) Malad. des Femmes Grosses, Livre II. chap. 26. (y) Cap. 38.
(z) Ruysch, Obs. 11. Gutterman in Commenc. Norimberg. 1731. Semest. I. Spect. 20.

MAN (a): 'A perfect Child, says he, was born, whose Umbilical Rope was all corrupt and putrid; it would, therefore, have been impossible that it should have lived, unless it had taken its Nourishment some otherhow than by the Navel.' But it is not said, whether the Child was born dead or alive; but, supposing it alive, no one can tell how long this Navel-string had been corrupted; or what Parts had been destroy'd by the Putrefaction; whether the Cellular Membrane, and Mucus of the Rope only were affected; or if the Vessels involved in them were also destroyed. Hence there is no deciding any Thing from these two Cases; but the two following are much more exact and to the Purpose, mentioned by CHATTON (b) and ROMMELIUS (c), both agreeing most exactly in the principal Circumstances; for they say, 'Healthy Children were born with the Navel skinned over. The Secundines were afterwards brought away of a natural Size, and the Extremities of the Umbilical Rope were coalesced.' The Mother of the one told CHATTON, that she had gone with Child three Weeks longer than her ordinary Time; and he thought the Navel was as sound as a Child's of three Weeks old used to be. ROMMELIUS judged the other

(a) Compend. Anat. not. 37. (b) Vander Wiel Obsery. Gent. post. Pars I. Not. in Obs. 32. (c) Ephemerid. German. Dec. 2. Ann. 7. Obl. 209.

Child's

Child's Navel to have been *as found as in Children several Months old*: A small little impervious Process, about the Size of a Worm, stood out from the Navel, and the Umbilical Rope was as *small as a Goose-quill*.

It must be observed, that there is no Difference, as to Soundness, in a sound Navel of Children three Days, or three Months old; and the Secundines being of a natural Size, shews, that this Accident did not happen long before Birth; for, from what has been said, § 30. & *supra*, of the *Placenta* being a lifeless Mass, after the Communication betwixt it and the Child is destroyed, and from what the best and most experienced Practitioners in Midwifry (*d*) agree in, the Size and State of the After-burden must be greatly changed in a very little Time after its lifeless State, § 30. begins. Therefore we must consider *two Things*: *First*, In what Time after Birth the Navel is flamed over; and, *Secondly*, Whether a *Cicatrix* will be sooner or later brought on, by the Child's Continuing immersed in its Waters after the Navel-string was broke.

As to the *First*, Children's Navel-strings frequently fall off in four, three, or two Days after Birth, and the Navel is found where the flannelled String separated, and it is well known, how very soon the Re-

(*d*) Mauriceau *Malad. des Femmes* gross. Liv. II. chap. 9, Ruyisch *Theor. Obier. Adv.*

mains of the Navel-string drops off from Brutes.

Secondly, If, then, such a Separation can be made so soon, when dry Rags only are applied, or by being exposed to the Air, we have Reason to think, that the Skin would be much sooner brought on the Navel, while the Parts were soaking in the *Liquor Amnii*, which may be as proper for healing as the *Saliva*, which soon heals Wounds or mild Abscesses in the Mouth; And Urine will scarce allow Surgeons to keep the Wound in Lithotomy long enough fresh; but, notwithstanding their utmost Efforts, often render the Passage callous. Hence we may conclude, that the Navel-strings were broke a very little Time before Birth; and if it was a Day or two, the *Fœtus* might continue so long in Life without any new Supplies of Nourishment, as well as it does several Days after Birth, when it ordinarily takes only some Purgative Syrups: And there is an Instance, in the *Medical Essays* (e), of a Child that lived seven Days after Birth, though nothing could pass out of its Stomach into its Guts to nourish it. The Probability of a Child's living in the Womb so long without Nourishment, as I mention, is certainly much greater, than that it should continue in Life for Days,

two and Child, depends upon their own
one and the
(e) Vol. I. Art. 14.
Weeks,

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Weeks, or Months, after the Waters have been evacuated, and continued to be constantly discharged, as MAURICEAU and others have mentioned.

OBSERVATION VI.

I delivered the Wife of one *Buckle*, of *Stillingfleet*, about six Miles from this City (*York*) on the 12th of *January* 1749-50. of a very strong lusty Child, and there were no Waters at all. And the Mother told me, she never, during her Time of Pregnancy, or at her Labour, parted with any Waters from the Womb. From all which I shall conclude, that these Children, mentioned by CHATTON and ROMMELIUS, were under no Necessity of being supplied with Nourishment any other Way than by the Navel, and consequently do not prove what was designed by appealing to them.

I have been a little more prolix upon this Affair than some may think necessary; but my chief View is, to convince the World of the Necessity of opening pregnant Women, who die in the last Month or six Weeks of their Time, in order to preserve The Child. Which is still made more evident from the following Accounts.

As the Circulation of the Blood, in both Mother and Child, depends upon their own Hearts and Vessels, § 26, (29, 30. the one

can live, although the other die; as has been proved from performing the *Cæsarean Operation*, after the Mother has been dead some Time, and living Children have been taken out. HORATIUS AUGENIUS (f) saw a living Child taken out of its dead Mother, who died of an Ulcer in the Womb; she had been twenty Days without Meat or Drink, having vomited every thing she took immediately. MAURICEAU (g) saw a live Child taken out of its dead Mother, a Fortnight before the End of her Reckoning. JOHANNES DOLÆUS (h) tells us, that a Woman, eight Months gone with Child, died of a Fever, and the next Day, the By-standers observed the Child to move for twelve Hours; but, wanting a Physician or Surgeon, it was left there. DOLÆUS (i) saw another Child move in the Belly of a Woman who died the Day before of an Apoplexy. SENNERTUS (k) says, the Midwife and By-standers observed the Child to move in the Womb, five Hours after the Mother's Death. CORNELIUS STALPART VANDER WIEL (l) and PETRUS STALPART (m) tell us, that at the Siege of Ber-

(f) De Miff. Sang. Lib. V. Epist. 7. cap. 11. Lib. VI. cap. 15. fol. m. 184. (g) Obs. 315. (h) M. N. C. Dec. II. An. 5. Obs. 187. p. 279. (i) Encycloped. Chirurg. Lib. IV. cap. 5. p. 977. (k) Pract. Medice Lib. IV. part. II. §. 6. cap. 8. p. 437. (l) Obs. rar. Centur. poster. Obs. 320. Schol. p. 355. (m) Differt. de Foet. Nutrit. p. 45. Lib. M. p. 355.

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gen op Zoom (not the last) a Soldier's Wife near her Time was getting some Water, and was cut in two by a Cannon-Ball, insomuch that the Child in its Membranes fell into the Water, where it continued some Time, and then was found by a Soldier, who observing something to move took it up. The Child, by Order of one CORDUA, was taken out of the Membranes, and was christened ALBERTUS AMBROSIVS. The last Author also mentions a Bitch, that was opened some Time after she was dead, and living Whelps were taken out of her in the Bags, and kept so for half an Hour; and, upon being put into warm Water, began to stir again, when they seemed to be dead. MERY (n) says, a Bitch going to whelp was bled to Death, and half an Hour afterwards was opened, when living Whelps were taken out of her. Many Proofs there are of Children being born some Time after the Mother's Decease. SCHENKIUS (o) mentions a Woman who died about Five o'Clock in the Afternoon; and at Three o'Clock next Morning the By-standers heard a great Crack, when a Child was born dead, having two Fore-teeth. HARVEY (p) and JOH. MATTHEUS (q) say, a living Child

(n) Hist. Acad. Roy. des Sciences. Act. Erudit. 1719. Mens. Aug. p. 342. (o) Obs. Medic. Lib. IV. de Partu, Obs. 14. (p) De Generat. Animal. (q) Quæst. Medic. IV.

was born, some Hours after the Mother's Death. EHRENF. HAGENDORN (r) says, a Person died in Labour, on *January* 12, 1683, and some Hours after, a living Child was born, and was baptized. VESLINGIUS (t) says, a Woman died on the Sixth of *January* 1633, of an Epilepsy, and on the Eighth a Child was born. GEORGIUS DETHARDINGIUS (t) mentions an healthy Child to have been born half an Hour after the Mother's Decease. IDO WOLFIIUS (u) says, a Woman died in Labour, in *July* 1667; six Hours after her Death, the Husband, perceiving a Motion in the *Abdomen*, called others to see it, and would have had the *Cæsarian* Operation performed, but was hindered by them: However, a Child was brought forth dead, eighteen Hours after the Woman's Decease.

These Facts are sufficient to support my Argument for always opening a pregnant Woman, when she dies in the two or three last Months of her Time; which Operation should have been performed upon a Wine-merchant's Wife in this City, who died in Labour a few Years ago undelivered, altho' she had a Man in Waiting, during the five Days she was in Labour, who neither

(r) Hist. Med. Physic. Cent. 3. Hist. 13. (s) Obs. Anatom. 7. (t) M. N. C. Dec. 3. An. 7. & 8. Append. p. 77. (u) Obs. Chirurg. Medic. Lib. I. Obs. 41.

meddled with her himself, nor yet called for any other Assistance.—But to return;

§ 34. I come in the second Place, § 32. to examine, Whether the *Liquor Amnii* be proper Food for the *Fœtus in Utero*?

As this Liquor is at first mild and mucaginous, and afterwards becomes thinner, more acrid and urinous, it will be improper Food for a *Fœtus* in its different States: For, while the Parts of a *Fœtus* are weak, and have little Action, they are not so well fitted for digesting and breaking the Cohesion of a Fluid, whose Particles separate with such Difficulty; whereas it would have been much more capable of digesting stronger Food, after its Stomach, Guts, and Organs are stronger; and, consequently, this Liquor should be of the reverse Consistence to what is above described; as we see happens in a Case, which must be allowed to be analogous to the present Subject; that is, in the Consistence of the Milk, which is at first thin and purgative, but afterwards becomes thicker and stronger Food. And we frequently meet with the *Liquor Amnii* so putrid, that it would be very improper for Food. Moreover, it is improbable, that a Liquor, that is to serve for Food, should be previously sent into the *Fœtus's* own Vessels, to circulate and to be secreted. In order to prepare it for being swallowed; which

which § 20, 21. shew, must be the Case, on this Supposition.

Some argue, That the *Fætus* must take in this Liquor by the Mouth, because of the Resemblance which, they alledge, is to be seen between this Liquor and that in the Stomach. If the *Liquor Amnii* be at first mild and mucaginous, and afterwards becomes thinner and more acrid, it differs greatly from that in the Stomach, which gradually turns more viscous, as the *Fætus* increases; and as the larger it is, the greater Quantity might be supposed to be taken down, we might sometimes find the thin Liquor in the Stomach, without being mixt for some Time, as we find in Adults. This very Difference destroys the Supposition, That the *Liquor Amnii* is ever sent down into the Stomach.

This Liquor of the *Amnios* being in less proportional Quantity in general, at or near the Birth, is already accounted for, § 24, 33. without inferring, that it is swallow'd down by the *Fætus*: For, while the *Fætus* is weak, the Arteries of the *Amnios* pour out more than the Veins take up, § 24. and the Heat, assisted by the conuulsatory Motions, to which the Liquor is exposed, melts down its Particles, and makes it appear more watery.

§ 35. I must farther remark, That the Lips of *Fætules* are generally shut, unless opened in Labour; and have frequently a
thick,

thick, viscid, whitish Substance sealing up, as it were, both the Mouth and Eyes: And that the Under-jaw, being supported by its Levators, will keep the Tongue applied to the Roof of the Mouth; and the *Pharynx* always is shut in Animals, unless when the voluntary Action of Deglutition is perform'd. For, let any one cautiously open the Mouth of a *Fœtus*, and gently depress the Point of the Tongue, and he will see the Root of it raised up against the Palate. And when the Root is also depressed, he may observe the *Velum Pendulum* hollow below, where the Tongue was lodged; and is so convex above, as to shut up the Passages to the Nostrils. That their *Pharynx* is always shut, may be proved by putting a Funnel into the Mouths of *Fœtuses*, after their Tongues are gently depressed, and holding them erect, pour Water into the Funnel, and none will pass farther than the Root of the Tongue.

I cannot omit taking notice of the remarkable Mechanism employed here, for keeping the Tongue more closely applied to the Palate. It is well known, that the Force, exerted by the Muscles in their natural Contraction, is increased and diminished proportionally to their being more or less stretched. It is also known, that the Muscles coming from the Jaw to the Tongue and *Os Hyoides* are thicker, and consequently stronger, than those that come

to these Parts from the *Sternum* and *Scapulae*. Nay, when a *Fœtus* lies with its Neck bended forward (as in a natural State it ought to be) such of these Muscles, as are situated below the *Os Hyoides*, are considerably relaxed, which those above it are not. Since, therefore, these latter are naturally stronger, and gain so much over the others by the Difference of their Stretching, it is no Wonder, that they pull the *Os Hyoides*, Tongue, &c. strongly upwards, and press them so strongly against the upper Part of the *Fauces* and Mouth, as to leave their Print in the flexible Parts, and by bringing all the Sides of the Passage into the *Oesophagus* close together, prevent any Thing's getting down into it. Since, then, there are such Obstacles to be overcome, the *Liquor Amnii* cannot pass, unless either the Force with which it is squeezed is superior to the Resistance, or the *Fœtus* must perform the Action of Deglutition; and what the Consequence of such forcible Pressure in an Embryo must be, may be easily guessed at: And there has been no Proof of the *Fœtus* ever performing the Action of Deglutition before their Breathing; nay, from their very Posture, § 39. there arises a sufficient Obstacle thereto.

The Quantity of *Mucus* found in the Stomach and small Guts, and of the *Meconium* in the great Guts, is no Argument for Food being

being furnished from the *Amnios*, but rather appears very strong against that Opinion; for it is scarce to be imagined, that the *Meconium* should be the Recrement of any Proportion worth Notice of the Food the *Fætus* had taken, during the whole nine Months of Gravitation, seeing there is scarce more of it, than what the Infant passes of *Fæces* in one Day; and that its Colour evidently discovers the Liquors secreted within the *Fætus's* Body, to compose such a considerable Share of it. For, during the whole Time of Gestation, the *Mucus* in the Stomach remains of near the same Consistence, except that it becomes gradually somewhat more viscons, as the *Fætus* increases; but that in the small Guts becomes thicker and darker-coloured as it descends into the great Guts, where it is collected, under the Name of *Meconium*. And as the youngest *Fætus*, that can be dissected, have their Stomachs full, it seems plainly to prove, that the Source of the Liquors is from the *Viscera* themselves; and the Contrivance of pushing the Blood in the Descending *Aorta*, with the united Force of both Ventricles of the Heart, § 26. is in part designed to promote a greater Secretion in these hollow *Viscera*, where the Resistance to the Effusion of the Liquors will be less than in ordinary Glands. And that the Stomach and Guts are able to furnish
their

their Contents, is evident: for BELLINGER (x) describes a Pig brought forth with its Mouth quite shut up, but having its Stomach and Guts full of the usual Contents; and Mr. ANTOINE (x) found a glairy yellow Liquor, like to Excrements, in the Stomach and Guts of a Lamb, that had neither Head, Heart, Lungs, Liver, nor Pancreas; all which demonstrates, that the *Meconium* is no other than the grosser Parts of the Liquors secreted in the Alimentary Tube, and of the Bile and Pancreatic Juice: And the monstrous Child, § 32. Tab. XVII. Fig. 1. & 3. brought forth in this City (York) shews, that the Stomach and Bowels are not necessary for nourishing the *Fœtus in Utero*.

From what has been said, it is evident, *First*, That a *Fœtus* is capable of receiving its whole Nourishment by the Umbilical Vein alone, whereas none can subsist without the Umbilical Vessels.

Secondly, That the *Liquor Amnii* is ill calculated, in its natural State, for the Food of a *Fœtus*; and, in morbid Cases, becomes altogether unfit; and it is highly improbable, that a Creature should furnish its Food out of its own Body: which must be the Case, if the *Fœtus* should feed on this Liquor.

(x) *De Fœtu Nat. cap. 1. (x) Hist. de l'Acad. des Sciences, 1703.*

Thirdly,

Thirdly, That it cannot be proved, that That Liquor is ever sent down into the Stomach. And,

Fourthly, That all the *Phænomena* of a *Fœtus* can most reasonably be accounted for, without supposing the Liquor of the *Amnios* to be any Part of its Food.

§ 36. Having now described the component Parts of the *Ovum*, § 16, 17, 18, 19, 20, 21, 22, 23; the Manner of carrying on the Circulation betwixt the Mother and *Fœtus*, § 7, 8, 9, 12, 24, 25, 26, 27, 28, 29, 30, and 31; and the Manner of the *Fœtus*'s being nourished in *Utero*, § 32, 33, 34, and 35. I hope I may be allowed a small Digression, in order to prove, that the *Fœtus* was always in the *Ovum*, and never was an *Animaleule* in *Semine Masculino*, as LEWENHOEK, &c. have vainly imagined.

In order to set this in as clear a Light as I could, I have been the more particular in my Description of the *Ovum*, *Placenta*, *Chorion*, *Amnios*, and Umbilical Vessels, from § 16. to 23. by which we find, First, That the *Ovum* is composed of two Integuments, which afterwards prove to be the *Chorion* and *Amnios*.

Secondly, On one Side of these Integuments are a great Number of small Vessels, which

which are demonstrated to form the *Placenta* afterwards. And,

Thirdly, It is evident, that these Parts of the *Ovum* are Productions or Parts of the *Fœtus*, all which were united before Copulation, while the *Ovum* was yet in the *Ovarium*.

Now, according to LEWENHOEK's System, the Animalcules in *Semine Masculino* are the Embryo's: How, then, will he unite the Vessels of the Child with Those of the *Placenta*, &c. § 19? And with Those of the *Chorion* and *Amnios*, which seem Productions of the *Cutis* and *Cuticula* of the *Fœtus*, § 23?

Let us also consider, that the Circulation, in an Animal, cannot be performed without a Secretion of what is supposed to be, or is commonly called, the *Animal Spirits*; and that there cannot be this Secretion, without the Circulation, is also as evident. May there not, then, be something in *Semine Masculino*, whose Use is, to begin these necessary Motions in the Embryo already placed in the *Ovum*, until it can have this *Sine-quâ-non* secreted; and also to nourish and support it, until the *Placenta* shall adhere to the Womb? But this Point I shall leave to be discussed by some abler Hand, and return to the Progress of the Embryo in *Ovo*, whose *Placenta* had just begun to adhere to the *Fundus Uteri*, § 17. first observing,

serving, that, was LEWENHOEK'S System true, it would contradict the well-known Maxim, That *Deus nil frustra creavit.*

§ 37. As soon almost as we can observe an Embryo, its Umbilical Vessels discover themselves (y); then the Heart or *Punctum Saliens*, Spine, *Cerebrum* and *Cerebellum* appear; and, last of all, the Extremities of the Embryo gradually appear one after another. The Head, being larger in Proportion to the Body, the younger the Embryo is, at that Time, is supposed to be specifically lighter than the other Parts; which is the Reason of its erect Posture in the Womb. The Mouth, Lips, Nose, and Cheeks are at first wanting, and leave a large Chasm instead of a Mouth, which is gradually contracted by the Formation and Conjunction of these Parts, till it is brought to a due Size.

I have here (Tab. VIII.) endeavoured to give the Reader an Idea of the Progress of an Embryo from the first Appearance to about the third Month; but I must first acquaint him, That altho I have fixed One Month, Two Months, &c. yet that is not to be supposed to be exactly just, because of the few Cases wherein a Woman can be

(y) Harvey, Exercit. 56. Ruych. Theor. 6. & spallanz. Riolan. Anthropog. Lib. VI. cap. ult.

positive of her being got with Child; and, was the certain of That, she cannot tell how long the Embryo was dead before the Miscarriage happened. The Women commonly reckon from the last Appearance of the *Menses*, whereas they, perhaps, were only got with Child a few Days before the Time they expected the Eruption of them; yet, nevertheless, they will reckon That as one Month; therefore none of them can be always certain, unless they have had no Communication with a Man but at one certain Time; and where such Cases do happen, People of proper Judgment are not made acquainted therewith: Whence we may account for the different Descriptions, given by various Authors, of the Size, Shape, &c. of Embryo's of the same supposed Age. For two Persons shall each part with an Embryo, and both shall call it two Months old; whereas (for the Reasons above) one shall be seven, or near eight, while the other shall be only five Weeks old; a Description, therefore, of each being taken by two different Persons, no Wonder their Relations should vary. Another Reason may also be given for the Variation in the Size of Embryo's even of the same Age, as well as for Children at or after their Birth, according to their different State of Health, &c.

The same Argument holds good in respect to the Time the Embryo may die, before

before it be brought forth; and yet the Woman reckons from the last Eruption of the *Menses* to the Time of Abortion.

I have endeavoured to shew the regular Progress of the *Fætus* as accurately as I could, and to ascertain their respective Ages, under the Inconveniencies abovementioned, as may be seen in *Tab. VIII.* MAURICEAU (2) pretends to determine the Proportional Increase of *Fætuses in Utero* to be 64 times their own Weight in treble the Time. For he says, at Birth a Child weighs twelve Pounds, of sixteen Ounces each; at three Months, it weighs three Ounces; at one Month, three Fourths of half a Dram; and, at ten Days, less than half a Grain. But this he cannot be certain of, not only for the Reasons above, but also because he could not weigh one and the same *Fætus* in the different Months, so as to determine its Progress: His very *Datum* is wrong; for he fixes the Weight of a Child, at its Birth, at twelve Pounds, whereas there are some of ten, some of twelve, and others above fourteen Pounds Weight; which must render his Calculation very uncertain. The best Rule I take to be, is from the different Degrees of Perfection, whereby to judge of the Age.

(2) *Mémoires des Femmes Grosses*, Liv. I. chap. 35.

When the Embryo is about the Size of a Lettuce-seed (*a*), *Tab. VIII. Fig. 3.* the Umbilical Chord is like a Hair, and the Head is not to be distinguished, nor yet are the Eyes or Limbs to be discovered even by the Help of Microscopes. Its Shape is oblong, and seems an indigested Mass. When it is a little bigger, it appears as in *Tab. VIII. Fig. 4.* When yet a little larger, being near the Size of a Barley-corn, there seems to be a small Appearance of a Head, but neither Eyes or Limbs are to be found, *Fig. 5. and 13. Let. c*; but when it comes to be full as large as a Grain of Barley, then the Head begins to be distinguishable, and the Limbs seem to be Tubercles about the Size of a small Pin's Head; and the Eyes resemble very small black Points; the Umbilical Chord is then about an Inch long. The Ovary, as in *Fig. 15.* was near two Inches long, and the Embryo was three Tenths of an Inch, and the Umbilical Chord six Tenths of an Inch.

When the Embryo becomes half an Inch long, *Tab. VIII. Fig. 7.* the Limbs begin to project, the Head still being greater, in respect of the Body, and the Eyes are very distinct, and the Ears are like two Holes below the Eyes. Among the inferior Limbs,

(a) Ruysch, Thef. 6. No. 43, 44, 45. *Tab. II. Fig. 1, 2, 3.* No. 46. *Fig. 4.* No. 47. *Fig. 5.* No. 48. *Tab. VIII. Fig. 1, & 2.* Thef. 10. No. 29.

the

the Parts of Generation are more distinguishable than the rest, but of what Sex is not to be discerned; for, without the greatest Attention, that cannot be discovered in the third Month; nay, such is the Resemblance of both Sexes, even in the fourth Month, that some would think the Embryo to be of the Masculine Gender, although it be the reverse.

When the Embryo is near an Inch long, as in *Tab. VIII. Fig. 8.* the superior Limbs are far more perfect than the inferior; for the Rudiments of the Fingers begin to appear; but, in the Feet, no Toes appear. Now the *Epidermis* may be found. *RIO-LANUS* (b) reckons this to be about one Month old; he says, the Body was cover'd with a Sort of *Mucus* like the White of an Egg; which, being taken off, seemed to be a kind of Membrane. The Membranes or Secundines were whole, and contained about three Ounces of a yellowish Water.

SCHURIGIUS (c) says, That after five or six Weeks, the Spine is crooked, and no thicker than a Thread; the two black Spots appear instead of Eyes, and a white Line instead of a Nose. The *Cranium* is like a Membrane, containing a *Mucus* instead of Brains. In the Breast and Abdomen the *Viscera* scarce appeared. On the Outside of

(b) *Anthrop. Lib. 6. cap. ult.*
Sect. I. cap. 2. § I. p. 30.

(c) *Embryolog.*

the *Chorion*, there appeared a Sort of Fleshy Protuberances, which adhered to the *Uterus*.

RIOLANUS (d) says, That at two Months, the *Cranium* is still membranous, and the Brain a *Mucus*. The Hands seemed to be fixed to the Shoulders with Arms, and the Feet seemed to adhere to the *Ossa Ilii*. The Liver seemed to fill the whole *Abdomen*. The Membranes of *Secundines* were downy and whitish without, and contained six Ounces of Water. At this Time, the *Ossa Innominata*, *Costae*, and *Scapulae* are cartilaginous. The Limbs, and the Pupils of the Eyes are very visible, as in *Fig. 9*.

MAURICEAU (e) saw a *Fœtus* of about ten Weeks, that was alive, moved its Arms and Legs, and opened its Mouth; the whole *Ovum* was as big as an Hen's Egg: from whence I judge it to be about five, or six Weeks at most.

HARTMAN [M. N. C. Dec. iii. An. 9. and 10. *Obs.* 101.] says, An *Ovum*, that was the Length of a Finger, was full of clear Water, in which was an Embryo of the Length of the last Joint of the little Finger.

When about an Inch and half, or three Quarters long, the Fingers and Toes are very distinct; and, when about two Inches, BURTON (f) says, the *Abdomen* was found

(d) Loc. citat. (e) *Observ.* 297. *Observ.* 108.
(f) *Thef.* 6. N. 50. N. 3. *Thef.* (g)

open, and the *Intestinula*, the *Omentum*, and Liver were quite naked. In one, that I have in my Collection, the *Abdomen* was a little open, and Part of the *Intestines*, *Let. 6, Fig. 12, Tab. VIII.* were out, and the Nose was near closed, except a little at the Top, *Let. 4*; it is represented at its full Bulk in *Fig. 12*. The Fingers and Toes were not only distinct, but the Ends, where the Nails were to grow, were very easy to be discerned by the Help of a Glass, which magnified but very little; as was also the Entrance into the *Vagina*, although it appeared to be a Male, till narrowly inspected through a Glass. The Mouth and all other Parts seemed to be formed.

About the End of the third Month the Nose is closed, and the *Palpebrae* may be discovered. The Bones of the *Cranium* all begin to appear, and seem to be membranous towards their Edges. The *Clavicles*, *Ribs*, and Bones of the Arms and Hands are now distinguishable; as are the *Os Iliacum*, Thigh and Leg-bones, and Spine.

Ruyssen (g) says, the Embryo, about this Time, is the Length of a long Finger, and then it is difficult for any Person, not accustomed to these Things, to distinguish the Sex; because the *Clitoris* is very considerable, and projects so far as to resemble a

Penis;

Venis, which it continues to do till about the fourth Month ^(b).

Ruyssen says ⁽ⁱ⁾, In the fourth Month the *Labia* increase so as to cover the *Clitoris*; and the Bulk of the whole *Ovary*, when intire, is about the Bigness of a Person's Head.

About the End of the third, during the fourth, or Beginning of the fifth Month, the Mother begins to be sensible of the Motion of the *Fœtus*; (which, by some, is called *Stirrings*) the first Sensation of which is, what is commonly, but very improperly, called *Quickening* of the Child: For it is evident to a Demonstration, that the *Fœtus* is as much alive, from the very first Beginning, to the Time when the Mother first feels it move, as it is from that Time to the Birth, at the End of nine Months.

These *Stirrings* are felt sooner or later, according to the Bulk of the Child, and of the Size and Shape of the *Pelvis*, and of the Quantity of Water contained in the *Amnios*. I observed before, § 21, That the Waters are in larger Proportional Quantity, the younger the *Fœtus* is; therefore the young *Fœtus* may stir in the Waters, without the Mother being any way sensible of it: But when it grows more in Bulk, and the Waters are in less Proportion, then the Woman

^(b) Thef. 6. No. 54. Thef. 10. No. 82. ⁽ⁱ⁾ *Loco citato*.

begins to be sensible of its Motion. Another Reason may also be assigned; for, while the Womb is so small as to continue in the Pelvis, a Motion of the Fetus may not be so easily perceived by the Woman; but, when it grows so large as to ascend above, and rest upon the upper Part of the Pelvis, or lower Hypogastric, the least Motion then becomes perceptible by the Mother. About this Month, LA MOTTE (*Obs.* 306.) says, the Embryo is about five Inches long.

In the fifth Month, the Nails, though soft, appear; as does, sometimes, the Hair like Down, but very thin; and the Hair about the Eye-lids and Eye-brows are discernable.

Children born about the End of this Month do sometimes live: RAY PAULUS AMMANUS (*k*) mentions a Person at Naples, who brought forth a Child in the fifth Month, that lived fifteen Months. And HIERONYMUS MONTEUS (*l*) tells us of a Child's being born in this Month, that lived thirty Years; and FRANCISCUS VALLESIUS (*m*) mentions a Girl, that lived twelve Years, although born in the fifth Month.

These Facts strongly support the Reason I gave, § 33, for opening deceased preg-

(*k*) L. 2. pag. 8. Schringius, p. 890. Sect. 18. cap. 4. § 6. (*l*) Anst. Merbor. Dom. 4. cap. 21.

(*m*) De Sac. Philosoph. cap. 18. (*n*) Theol. 1. 1. cap. 18. (*o*) Theol. 1. 1. cap. 18. (*p*) Theol. 1. 1. cap. 18. (*q*) Theol. 1. 1. cap. 18. (*r*) Theol. 1. 1. cap. 18. (*s*) Theol. 1. 1. cap. 18. (*t*) Theol. 1. 1. cap. 18. (*u*) Theol. 1. 1. cap. 18. (*v*) Theol. 1. 1. cap. 18. (*w*) Theol. 1. 1. cap. 18. (*x*) Theol. 1. 1. cap. 18. (*y*) Theol. 1. 1. cap. 18. (*z*) Theol. 1. 1. cap. 18.

nant Women as soon as possible after they die.

RIOLANUS (*n*) says, in the sixth Month the *Fœtus* is perfect in all its external Parts; the Ears outwardly right, but not perforated; and the *Palpebrae* are united. The Testicles were in the Groin, beneath the *Peritonæum*.

RUYSCH (*a*) says, At this Time the *Cli-toris* is so diminished, or the *Labia* so grown as nearly to cover it.

SCHURIGIUS (*p*) says, The Wife of one *Custallus*, in this Month, brought forth Twins that lived; and the Wife of one *Krunau* brought forth a Daughter, that lived fifteen Years. Another Person bore a Child that lived ten Years. ADRIANUS SPIGELIUS (*q*) knew one born in the sixth Month, that lived; and SCHENCKIUS (*r*) mentions Instances of the same Kind; in one of which, the Child was fed through a Funnel, because it could not suck.

From this Month, to the End of the ninth, the *Fœtus* continues to grow to be more perfect within, and to grow larger; but the *Ovum* does not extend in Proportion to the Increase of the Bulk of the Child, as

(*n*) Loc. cit. (*a*) Epist. de Infant. Part. Temp. (*p*) Loc. cit. (*q*) Epist. de Infant. Part. Temp. (*r*) Obs. Med. Lib. IV. p. 528. Carlenus, contradi. S. Tract. III. cap. I. it

it did in the first Months; which may be accounted for from § 24.

T A B. VIII. Explained.

Fig. 1. represents three human *Ova*, of different Sizes, before they are impregnated.

Fig. 2. shews an *Ovum*, after it is impregnated and has been some little Time in the Womb. *a*, shews the Membranous Part or Bag. *b*, shews the Fibrous Part of *Placenta*.

Fig. 3. represents an *Embryo* as small almost as we can distinguish them; which is yet larger in *Fig. 4.* In these, neither the Head nor Limbs are to be distinguished; and the Umbilical Chord seems to be only a long Tail.

Fig. 5. shews an *Embryo* of about a Fortnight old: The different Proportions betwixt an *Embryo* of this Age, and the whole *Ovum*, may be seen in *Fig. 15.* which came to my Hands after this *Figure* was engraved: In this, the Head appears distinct from the Body; but neither Eyes nor Limbs appear, the Whole being shorter than three Tenths of an Inch.

Fig. 6. is in most Respects like the last, only larger, being about four Tenths of an Inch in Length; the Head bearing a greater Proportion in respect to the Body; little Tubercles appearing where the Limbs should

should be; and a black Spot shews the Place for the Eyes.

Fig. 7. and 8. represent two Embryo's larger than the last; whose Limbs project yet more, but without resembling the Parts they are intended for: The First is about six, the Latter, seven Tenths of an Inch in Length.

Fig. 9. shews an Embryo of one Inch and three Tenths in Length; in which the Pupil of the Eyes begins to appear; and a Hole a little backwards below the Eye shews where the Ear is. Now the superior Limbs are far more perfect than the inferior, the Rudiments of the Fingers being very distinct; but there is no Appearance of Toes, till the Embryo is about an Inch and seven Tenths in Length, as in Fig. 10. and are yet more visible in Fig. 11, which is, when stretched out, about two Inches long.

Fig. 12. represents an Embryo of two Inches and a Quarter at its full Length, whose Eye-lids, Ears, Nose and Mouth are more perfect than in the other Figures; but the Top of the Nose betwixt the Eyes, at *Let. a*, is not closed up; and the *Abdomen* is all open below the Navel, as at *b*, where the Intestines are quite bare, something like that mentioned by *Ruyssch*. The Ribs

• *Thef. 6. No. 50.* are

fig: 4.



fig: 5.



fig: 6.



fig: 8.



fig: 7.



fig: 10.

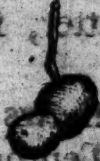


fig: 11.



fig: 9.



fig: 14.



fig: 13.



fig: 12.



fig: 15.



are distinguishable through the Muscles and Skin; and the Fingers and Toes are not only more perfect than in the other *Figures*, but the Parts where the Nails grow, are very distinguishable by good Eyes, or through a Glass. The *Clitoris* is so large, that at first View it seems to be a Male; but upon a more narrow Inspection, especially through a Glass, it proves to be a Female, the Entrance into the *Vagina* being very apparent.

Fig. 13. and 14. represent the Side and Back-view of an Embryo, which was erroneously called a *Superfætation*, being brought forth a few Days after the Birth of a living Child at its full Term.

Fig. 15. shews the *Placenta*, Bag and Embryo of the same Length as in *Fig. 5.* and the Length of the *Ovum* is above one Inch and three Quarters. *a*, The *Placenta*, or that Part which adhered to the Womb. *b*, The Membranous Bag. *c*, The Embryo.

What Alteration the *Uterus* undergoes, during the nine Months of Pregnancy, I have already taken notice of, in § 7, 8, 10, and 12. it is, therefore, now incumbent upon me to shew how the Woman is affected during that State; first premising, That, although I mention all the various Complaints that the Women are afflicted with, one and the same Person rarely has them
over

them all, some being disordered one Way, some another.

§ 38. The Woman that is pregnant has generally, at first, the Symptoms which usually attend, or precede, an Eruption of the *Menses*, especially near their wonted Time of appearing, and that too, with more Violence, the nearer it is to the first Beginning to conceive, because of the Smallness of the Embryo: But, as the *Fœtus* increases, these first Symptoms abate, which generally is about the third Month. During these three Months, a few Drops of Blood will sometimes appear about the usual Time of the Eruption of the *Menses*, because of the too great Distention of the Uterine Vessels. But after the third Month, the *Fœtus*, absorbing more Humours, lessens the Pressure against the Sides of the Vessels, whence, *cæteris paribus*, Abortions are not so frequent after this Time.

During the three first Months, the Woman is frequently subject to *Nausea's*, *Reachings*, and *Vomitings*; to *Faintings* and *Loss of Appetite*, § 59. to 63. As she advances, the next three Months, she has sometimes *Vertigo's*, § 63. added to her former Complaints, as also a *Difficulty* or *Shortness of Breathing*, and *Coughs*, § 65. sometimes now begin with *Pains in the Back*, § 67. And although the *Vomitings*, which afflicted her in the Beginning, may have

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have ceased for a Time, they frequently now begin again, although from another Cause, viz. the Extension of the Womb: During the last three Months, as the Weight of the Child and Extension of the Uterus increase, all the Complaints therefrom are increased also, such as Pains in the Stomach, Thorax, Groin, Reins, § 67. and Mamma, § 64. for their Nerves arising from the *Par Vagum*, which also sends Branches to the Loins, when one Part of the Nerve is compressed, the other is also affected: Hence Pains in the Kidneys affect the Bladder, especially when the Blood-Vessels are too much distended, either from a general *Plethora*, or from the Pressure of the Child against the Descending Aorta. The Woman is also frequently afflicted with Pains in the Thighs, § 14. and Legs, which are sometimes very oedematous, as well as the *Labia Pudendi*, § 68, 69. all which proceed from the Pressure of the Uterus, which hinders the Return of the Lymph, and sometimes with Costiveness, § 66. and a Suppression or Incontinence of Urine, § 66. and the Piles, § 90. all proceeding from the same Cause.

Having shown the different Progress of the Growth of the Fetus in Utero, and the Changes which the Womb and Vagina undergo, during Pregnancy, together with the Complaints which the Woman suffers
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during

during that State, I shall now proceed to the Situation of the *Fetus* a little before Labour comes on, &c.

§ 39. The Posture of the Child is owing to the Muscles being left to their natural Contractions, the stronger one's always prevailing, till their Antagonists exert such a Resistance by being stretched, as brings them to an *Equilibrium*; no Wonder, therefore, that the Spine is so much bowed forward, and the Head is bended towards the Knees; the Thighs are brought forward; the Legs are bent back; the Arms hang down, but are drawn a little forward; the Fore-arms, Hands and Fingers are all bended, and thereby the Hands are placed round the Knees or Legs; though sometimes they vary a little, as may be seen in *Tab. IX. Fig. 1.* For it will appear to any, who will consider the Structure of these Parts, That the Members are all brought to that Side, where the Muscles have an Advantage over their Antagonists in Number and Strength, or in the Angles of Insertion, or in the Length of the Lever they act with.

That the Posture above described arises from the natural Contraction of the Muscles, while the *Fetus* is in a sleeping State, is further evinced, by observing how much Children sleep after they are born, and how

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the Members naturally go into near the same Posture when People fall asleep; and a new-born Child, laid naked upon a Table, will immediately draw its Limbs into the same Posture as they were in the Womb, as near as the Case will admit of. The Situation, therefore, of the Child in a natural State, during Pregnancy, is this, *viz.* Its Head hangs downwards, with its Face on or near the Knees, which are as high as the Breast, on which the Chin rests; and its Heels close or near to the Buttocks; so that it seems as if it was looking downwards towards the Os Uteri. The Arms generally embrace the Legs or Knees; tho' sometimes the Hands are placed near the Chin, with the Elbows near the Angle of the Thigh and Body; the Back of the Child being towards the Mother's Back, *Tab. IX. Fig. 1.* In this Position the Child remains till a natural Labour begins; when the Head descends, and the Face falls towards the Woman's Back, so that when she lies upon her Back, it seems to creep into the World on its Hands and Knees, *Tab. IX. Fig. 2.*

§ 40. Some People have supposed this Alteration to be owing to the Head's growing specifically heavier than the Body; which Ouldrup thinks in Reality is not Fact; for it is well known, that the Head is actually larger in a double Proportion, with Respect to the Body, at its first Formation, than at

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the last Month of Gestation; and therefore probably, heavier. We must, therefore, assign some other Cause, which, according to OULD (s), seems to be as follows; viz. That the whole Spine is curved, and its Head looks down, § 39. so that the Fontanel is just opposite to the Fore-part of the Mother's Belly; and, therefore, as the first and greatest Efforts for the Expulsion of the Child are in the Bottom of the Womb, which presses directly on the Back of the Head, as is evident from the Posture of the *Fœtus in Utero*, § 39. and from the foregoing Description of the Womb, § 7. they must of Course immediately turn the Head downwards towards the *Vagina*, and its Face to the Mothers's Back, especially as it is at this Time floating in the Waters. Hence it follows, that the Change of the Posture of the *Fœtus* does not happen, in a natural Way, till the first Labour-Pains begin: And it is also very probable, that the Waters begin to gather immediately after the Child turns; for, as the Head takes up less Space at the Neck of the Womb, than the Buttocks, Legs, and Thighs, the Membranes are therefore more at Liberty to fall down by the Weight of the Water, and by the Forcings of the Mother from the Contraction of the Abdominal Muscles. Add to this,

(s) Midwifery, p. 25.



fig: 2.



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that the Child's Head then presses against the *Os Uteri*, and, like a Wedge, opens it, *Tab. IX. Fig. 2.*

T A B. IX. *Explain'd.*

Fig. 1. represents a Child in a natural Posture in the Waters within the Bag, before the Mother begins to be in Labour.

Fig. 2. represents a Child in its natural Position for Birth after the Labour-Pains begin, the Waters being still in the Bag, which fills the whole Cavity of the Womb.

Having now brought the Child into its proper Posture for Birth, I shall return to the Mother, whom we left labouring under several Complaints, and very unweildy with her Burden.

§ 41. Towards the latter End of the ninth Month of Pregnancy, the Patient imagines, that every bodily Disorder, which affects her, is her Labour; and as at this Time, the Muscles of the lower Belly are much distended, there are generally a great many small Fibres in the *Cutis* broken, which afterwards appear in the Skin of the *Abdomen*, like small white Lines, of different Lengths, and are only so many *Cicatrices*, by which, generally, a Woman may be known to have had a Child: And as there is now a great Weight on the Bladder

and Reason, the poor Woman must be subjected to great Uneasiness, and frequent Pains, which she often mistakes for her Labour; therefore, to prevent any Error, I shall endeavour to describe the true Labour as clearly as possible.

The pregnant Woman generally has, for some Days before her Labour, a Discharge of a thick *Mucus* from the Womb and *Vagina*; at which Time all the private Parts are swelled, and yet they are, notwithstanding, in a State of Relaxation.

About a Day, or perhaps two or three, before the Labour begins, she perceives an extraordinary Uneasiness; and, when the Labour really comes on, a Pain in the Back, about the Region of the Loins, begins, which lasts not long, but returns again, after, perhaps, half an Hour's Intermision, with double Violence. These Pains increase as they return, extending their Limits on each Side in a circular Manner, till both Points meet at the Navel, at which Time the Pain is so violent, that she can no longer conceal it, as she is now obliged to strain and force downwards at every Paroxysm, the Pain also extending itself downwards, and ending at the Orifice of the Womb.

When Parturition arrives at this Period, the Pulse being very high, the face red, the Patient sometimes seized with a Trembling, then Labour is certainly present, and then

she may be searched, and not before. This Operation is called *Touching*, § 12. and is by which the Operator may find the State of the Os Uteri, which should now be very thin, and should begin to dilate, in such Women as never had a Child before; but in others, who have had Children, it frequently begins to open some Days before Labour comes on.

As soon as the Patient finds Reason to suppose she is going into Labour, she should always have a simple Clyster given her, to bring away any hard *Fæces*, which may be lodged in the *Rectum*, unless she has Reason, on other Accounts, to be satisfied there are none ready to come away.

When the Patient's Pains increase, and the Space between them decreases, as the last Pains ought to be, and generally are the strongest, and of the longest Duration, then the Operator should again touch the Patient, but must observe to do it, when she has actually a Pain; and if there be Reason, from the Diagnostics hereafter mentioned, § 13. to expect an easy and happy Delivery, the less the Parts are handled, the better it is for both Mother and Child; because it always frets and stimulates them, and frequently inflames them so much, that what at first promised to be a safe, and probably an easy Birth, becomes at last very difficult and dangerous.

ardous both to Mother and Child, not only by straitening the Passage, but also by crushing the Child's Head. But, when there is a real Occasion for *Touching*, it ought to be done with all the Delicacy and Tenderness that can be used. Sometimes the Woman has Pains, which she mistakes for Labour-Pains, which really are caused by Cholics, Costiveness, or too great Extension of the Bladder by Urine; the Labour-Pains, as I observed, begin at the Back, but the Cholic-Pains generally begin at the Sides of the *Abdomen*, and do not remit as true Labour-Pains do.

§ 42. *Touching*, as it is commonly called, is the Introduction of a Finger up the *Vagina*, as far as the *Os Uteri*, to find the Condition it is in, the State of the Membranes, and what Part of the Child presents.

How the Patient is to be placed while the Operator is *touching* her, is not very material; but how she ought to be placed during her Delivery, is a Point not altogether determined, some being for doing it standing; others, sitting on the Stool, or the Knee of some of the Females in Waiting; whilst others are for delivering the Woman lying in or upon the Bed; and these also differ in their Opinions: whether the Woman should lie on her Back, or on one Side. I shall offer my Reasons for the Position, which I have

have found by Experience to be the best, safest, and easiest for the Patient, as well as most convenient for the Operator. But I must premise to the Reader, that I am here speaking of natural Births only; in preternatural or difficult Births, indeed, the Position of the Woman must, in some Particulars, be varied, according to the Case; but in general, in those Cases too, the Posture here laid down is best, for the very Reasons assigned below, § 79.

Whoever carefully examines the Bones which form the *Pelvis*, § 2. *Tab. I.* and *II.* and the Situation of the Womb, in *Tab. II. Fig. 1.* o, o, o, o, o, will easily see why, in all natural, and also in most preternatural Births, the Patient should lie on one Side. This Side-View of the *Uterus*, *Tab. II. Fig. 1.* was drawn from a Person who died undelivered at her full Reckoning. Now it is evident, if the Patient either sit on the Stool, or on the Knee of another Woman, if the *Os Coccygis* will yeild, it must be pressed inwards; which would in Course straiten the Passage, and thereby delay the Birth of the Child; and if the Patient be disposed to stand, this Posture will increase it: At the same Time, she is more exposed to the cold Air, than when lying, which has often been attended with very bad Consequences, although the Woman was safely delivered; and if the Patient be in Danger
of

of swooning or fainting after Delivery, this Situation will greatly contribute towards it. § 55.

OBSERVATION VI.

A Tradesman's Wife of this City (*York*) fell into Labour at the usual Time, in *July* 1739: She had a slow, tedious, but safe Delivery: was some Hours upon the Stool, with the Midwife attempting to deliver her at every Pain, which were but slow; at last, however, she brought forth a living Child, which the Midwife gave to a By-stander, as soon as she could get the Navel-string tied and cut; and then she brought away the After-birth, after which followed the Blood that was extravasated; and tho' the Midwife put the Patient to Bed with the usual Care and Expedition, yet the Cold she got had like to have killed her; for the *Lachia* were checked, and an Inflammation of the Womb ensued, which, with much Difficulty, I at last removed. Many repeated Instances of the like Kind I can give, both of some Peoples dying for Want of immediate Help, and of others being very near it, although they had timely Assistance; all of which were delivered upon the Stool or Knee; and no other apparent Cause of the Obstruction could be found, which indeed is sufficient of itself, for immediately

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ately upon the Exit of the Child and After-birth, the cold external Air must rush into the Womb, the bad Consequences of which are very evident.

The Inconvenience to the Operator is also greater than when the Patient is lying; for no Person can bend the Elbow-joint to thrust or pull with that Strength upwards or downwards, as sideways. The same Inconveniences, both to the Patient and Operator, attend a Delivery, when standing, except that the Os Coccygis cannot be pressed inwards, as when sitting.

Most of these Inconveniences are avoided by delivering the Patient lying in or on the Bed, for the Woman will be less apt to swoon or faint away, or to catch Cold, because the Cloaths may be kept closer about her Thighs, and the Operator may perform his Part with more Ease, and in less Time, especially if the Patient lies on one Side. For, when a Woman lies on her Back, the Bedding must be pressed down by her Weight, which makes it more difficult for the Operator to turn the Child in the Womb, especially if it be necessary to introduce his Hand between the Os Pubis and the Child, because the Bedding is higher where his Elbow is, than where the Woman's Buttocks are. This will appear evident by inspecting *Tab. II. Fig. 2.* where the *Partes* are laid as in an Horizontal Line. But this

this Inconvenience is removed when the Patient lies on one Side, as in *Tab. II. Fig. 1.* And if the Womb, either by too great a Projection of the *Vertebrae* of the Loins, *Os Sacrum*, or by any other Means, should be pressed forward over the *Os Pubis*, the Operator, by bending the Elbow, can, not only the easier assist the Patient, but can also exert more Strength, if required; and the Patient may lie on one Side, or the other, according as the Posture of the Child may require for the more easy turning it; as will be made appear in its proper Place.

The Woman, therefore, should lie on one Side, with her Face and Breast inclining forwards, and her Knees as near her Breast as conveniently she can, having a small warm Pillow betwixt them; and the *Pudenda* must be near the Edge of the Bed, with her Back in an oblique Direction from that to the Middle of the Bed; and a Person should sit close to the Bed-side, for the Patient to place her Feet against.

The Operator should be nigh the Patient, either sitting or kneeling close to the Bed-side (which-ever he finds most convenient) with a Sheet or Cloths before him, having his Hand under the Cloaths well greased with Oil, Pomatum, or Hog's Lard, and without uncovering any Part of the Patient, keeping out the external Air as much as possible.

§ 43. The Patient and Operator being placed as above, § 42. the Latter must introduce a Finger into the *Vagina*, to search for the Orifice of the Womb, which will not be found at the Extremity of the *Vagina*, but seemingly on one Side. If the Orifice be rightly placed in the *Pelvis* (which is known by being able to feel all Sides alike) and if it be somewhat dilated, its Edges thin, and that the Patient's Efforts seem to affect it considerably, and that it is near the *Pudendum*, a happy Event may be expected, provided the *Pelvis* and Child are naturally made, and in due Proportion. But on the contrary, if the Orifice be found with Difficulty, and incline too much any Way, § 79. if it be prominent, hard and thick, and all circumjacent Parts dry and contracted, there is great Reason to dread the Consequences; for its being difficult to reach, shews that the Child's Head does not press against the *Os Tincæ*, and that the Child rather extends from Side to Side, by which it pulls up the Orifice, instead of pressing it down: Its being hard and thick, shews also that it wants the Pressure of the Head to dilate and stretch it; and the Want of Moisture must be a great Obstacle to its Relaxation. I must remark, That the *Os Tincæ* being a little open is no certain Proof of Labour approaching; because I have known Instances, where the *Os Tincæ* has been

been so open as to admit the End of a Finger, for a Month before Labour came on.

At this Time the Patient must take no solid Food, except Bread, Biscuits, or the like, Broth or thin Jelly being the most proper Nourishment. Her Drink, such as will promote a small Degree of Warmth, but not over-heating, such as Sack-whey, made stronger or smaller as Occasion may require; giving now and then some Spoonfuls of Barley or strong Cinnamon-Water, or Penny-Royal Water, as a Cordial, or the like, when a little faint or sick, or when her Pains grow languid.

But if her Pains all of a sudden leave her, and Vomitings and Faintings, with an intermitting Pulse, &c. ensue, then there is great Danger that the Womb is torn or burst, as happened in the following Case.

OBSERVATION VII.

The Wife of a Broker in this City (York) who had had several Children, fell into Labour at the regular Time: she had only a slow Labour at first, but after some little Respite her Pains became more violent; during one of which, she perceived something to crack within her (as she termed it); after which she exchanged her Pains for Faintings, &c. with an intermitting Pulse. On this Account I was called in: Being told

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told every thing that had happened, I was apprehensive of what, indeed, proved to be the Case; wherefore I told some of the By-standers my Opinion; and that, as the Child was alive, it was proper the Woman should be delivered as soon as possible, which was done directly. The Child was small, but very healthful and lively. Immediately after the Birth I introduced my Hand into the *Uterus*, where I found one Side of it burst so wide, as to have admitted my Hand to pass through the Opening, had there been Occasion. That Side of the Womb seemed to be hard and scirrhus, where the Fissure was. The Woman died in a few Hours, as I had foretold before I attempted to deliver her.

This is a Misfortune which happens more frequently than People are aware of; and I doubt not, but most Women, who die undelivered, without any external Appearance of Flooding, when the Child's Head does not block up the *Os Uteri*, have the *Uterus* burst, especially when attended with the Symptoms above. *La Motte* (*Op. 318.*) makes the same Remark.

§ 44. When Labour is somewhat more advanced, the Manner of the Waters gathering will be also a Guide, for, as the Orifice dilates, the Weight of the Waters forces the Membranes thro' it; which

is called the *Gathering of the Waters*: When this appears in an elastic, round, regular Bag, it is a good Sign; but when long, soft, and as it were like the End of a Gut, it is bad; for here it wants the uniform Shape of the Head, to hinder the Membranes from falling down more on one Side than the other: The more these Appearances are perceived, the more the Operator is under a Necessity of watching every Alteration, in order to administer timely Assistance.

§ 45. When the Womb is so much dilated as to give Admission to the Finger, the Operator must examine between the Pains for the Situation of the Child; for in the Time of Pain, the Membranes are so tense, from the Pressure of the Waters, that the Examining for the Head will endanger their Eruption before the proper Time, that is, before the Orifice of the Womb be sufficiently dilated; and then, as the Womb will not be so much extended, the Pains will mostly abate, for a Time: For, as the Expulsion of the Infant is performed by the Contraction of the Diaphragm and Abdominal Muscles on the Womb, and by a Contractile Disposition peculiar to the Womb itself, § 7. and 9. it is evident from the Nature of Things, that this united Contractile Force decreases, in Proportion as the Object recedes from its Influence, or, in other

other Words, as the Child advances into the World, and as the Contents of the Womb are discharged: therefore the Membranes should never be broken, before every thing else be ready for the Birth.

If the Head cannot be found (which will be discovered by its round Form and Hardness, and, perhaps, by the Pulsation of the Fontanel) it is then certain, that the Labour will be contrary to Nature; but, if the Head be easily perceived, and not too large, attended with the happy Circumstances already mentioned, § 43, 44. the Labour will be expeditious, and require little or no Help, either for Mother or Child. Sometimes it happens, that, although we can soon perceive the Head, yet the Labour becomes very tedious and difficult; for, tho' the Operator does feel it, yet if after the Pains have increased, and the Membranes have broke, and the Waters are discharged, the Head does not advance forwards, he may be certain, that either the Head is too large, or the Passage between the Bones is too narrow, which will occasion exactly the same Difficulty. It is also, sometimes, difficult to distinguish, with Certainty, what Part of the Head presents, if it be high up. And, indeed, sometimes it is no less difficult, in a large Child, to find whether the Breech, Hips, Shoulders, or Head present; but, when the Head is fully within

I Reach,

Reach, it is easy, from the Shape of the Bones, Sutures, and Fontanel, to know what Part presents.

§ 46. The Operator must be nigh at hand on the Eruption of the Waters, for then the Hand is of Service (if at all necessary) in the most easy Labours; for the same Efforts that break the Membranes, thrust the Head into the Orifice, which, perhaps, is not yet large enough to give it Passage, without some Assistance; wherefore the Hand must be administer'd in this Manner: It must be introduced as the Pain begins, and, as the Head is forced down, endeavour to thrust up the Orifice of the Womb, to make it pass over the Head, but without much Violence: By this Means the Labour is not only forwarded, but very often a *Pro-lapsus* or *Descensus Uteri*, or at least of the *Vagina*, is hindered, as may be gathered from the foregoing Description of the Parts.

This is all, in natural Births, that is to be done by the Midwife, before the Child's Head be advanced to be, in Part, out of the *Pulvina*: Hence we see why Children, whose Heads and Shoulders are larger than common, especially the first Time of the Mother's Lying-in, must occasion extraordinary Pains.

When the Pains remit, the Head seems to retire up again a little Way, upon which
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some People introduce a Finger into the *Anus*, to hold the Head in the Place it advances to; but there is no Benefit can accrue from such Practice; and it must require a great Pressure, which may much inflame the *Rectum*, and do great Injury to the *Anus*, whose Blood-Vessels are at that Time very full and extended, even so as to bring on the Piles. Moreover, when the Head is so far advanced, as to be hindered from retreating, by a Finger introduced into the *Anus*, it must have passed through the *Os Uteri*, and can never go up again: Besides, great Injury may be done to the Child as well as the Mother; for, in a natural Way, the Face should be towards the *Rectum*, and the Operator might chance to press against the Eye, Nose, or the like; and such Force, as would be necessary to hold the Head from retiring, would injure either of those Parts, without doing any Manner of Service.

I must here caution the Reader, not to be over-hasty to force up the *Os Uteri* too much, or too soon, over the Child's Head; because That, sometimes, is the Cause of losing the Child's Life, or, however, of hurting both the Mother and it. For, by the Violence of the Mother's Throws pushing the Child's Head downwards, and by the Operator's strongly thrusting the *Os Uteri* upwards, the Head may be forced
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out, and then the Child will stick at the Shoulders; whereupon the Mother's Pains frequently abate, § 45. and the Operator cannot give any further Assistance without Instruments; because the *Os Uteri* may collapse, or rather contract, § 125. for want of the Pressure from within, and so the Child may be strangled; for it sometimes, in this Case, will draw Breath, and be afterwards smothered to Death, for want of an immediate Delivery; as happened in the following Case.

OBSERVATION VIII.

A Lady at some Distance from hence (*Tork*), who had been so subject to repeated Miscarriages, as never to go beyond the fifth Month, did, by proper Medicines and Fare, go on to her full Time, when she fell into Labour; and every thing promised very well, till the Midwife, eager to shew her Dexterity, and to bring an Heir (the Estate being entailed) forced the *Os Uteri* over the Head too soon, and the Child stuck at the Shoulders; it breathed, and made some faint Cryings or Noise as the Midwife was seizing it with her Hands: In this Situation the Child remained for some Hours, during which the Midwife frequently tormented the poor Lady, till at last she was forced to give over: when, with proper Assistance, the Mother

Mother was safely delivered of a dead Child, evidently strangled. Had this Midwife left the Whole to Nature, the Child's Head, by pressing against the *Os Uteri*, would have gradually dilated it, so as to have permitted the Shoulders to follow with Safety, for the Child was very well proportioned every Way. I speak this from repeated Instances, where I have been sent for to deliver Women with the Child's Head thus advanced; when, upon strict Enquiry, I found the Midwife boasting how soon and dexterously she managed to get the Head out of the Womb, but was surprised what hindered the rest from following.

Another Evil also attends this Male-Practice; for the *Os Uteri* is sometimes torn by this Violence, which may not only occasion an incurable Ulcer, or other Complaints, § 171. but may also occasion the Death of the Patient and Child in any future Labour, because the *Cicatrix* of the *Os Uteri* will not extend so much as the other Parts, altho' the torn Part should be healed, § 127.

§ 47. Altho' I have said the Membranes should be left to break, without any Assistance from the Operator, yet it sometimes happens, that, from their extraordinary Thickness, § 22. the Mother's Efforts are not sufficient for that Purpose, notwithstanding the Orifice be dilated to its full Extent,

When this is the Case (which yet is very rare) the Operator, if convinced of it, may with Safety break the Membranes, and the Child will immediately follow; the Manner of doing it will be shewn below.

§ 48. The Pains now grow greater and more lasting, when the Head of the Child advances towards the *Pudenda*; where the Operator should have his Hands in Readiness to take hold of it, and to press that Part next the *Perinaeum* backwards, as the Mother's Throws force the Child downwards; and when the Head is advanced as far as the Ears, without losing Time, he must bring it away.

The lax and pliable Texture of the Parts of the Child, at Birth, greatly contribute to an easy Delivery; for the Bones of the *Cranium* have little or no Sutures, but are very thin and soft at the Edges, *Tab. I. Fig. 3.* that they may slip over each other, to contract the Size of the Head, in its Passage through the *Pelvis*, to which the Opening of the Fontanel greatly contributes. The Articulations of the Limbs also are very flexible, their Ligaments being extraordinary long, and the *Epiphyses* and *Apophyses* of the Bones being composed of the softest Cartilages.

§ 49. The Child being born, the next Thing to be done is, to tie the Navel-string about two or three Inches from the Navel, to cut

cut the *Funis* about an Inch from the Ligature, on that Side next the *Placenta*, or else to bring away the After-birth immediately. Either of these may be done, as it may be most convenient, as we shall see presently, when there is only one Child; but if there be two, or more, then the Navel-string must be always tied and cut as here directed; because no *Placenta* must be extracted till all the Children are brought forth; for that would cause a dangerous Flux of Blood, § 29, 30. And sometimes it is necessary to have two Ligatures, and to make the Incision betwixt them, § 29, 30, 31. lest there be Twins.

From what has been said, § 43, 44, 45, 46, 48. we may see that, *ceteris paribus*, the younger the Woman is, the easier will be the Labour, & *vice versa*; which is confirmed by daily Experience. We see also why the Os *Uteri*, in the first Labour, is not so easily distended as afterwards.

The After-birth being taken away, § 52. the Patient must be put into a warm Bed, and have every thing dry about her, and dry warm Cloths applied to receive the *Lochia*, and, in general, to be kept out of Danger of catching Cold, &c. Where Bandages, &c. are applied, Care must be taken not to draw them too tight, lest the *Lochia* be stopt, and an Inflammation of the Womb be brought on.

§ 50. The Position of the Child's Face at Delivery, as above described, § 39, 40, has always been allowed to be the most natural, and consequently the most easy, both to Mother, and Child; but Dr. Ould has taken upon him to contradict whatever has been wrote, or said before his Time, and gives what he calls his *Reasons*; which, I own, I think not sufficient in Theory, and I am certain he is wrong in Practice, as the best Authors unanimously agree.

Let us examine his own Words; for he says (r): 'That the Breast of the Child does certainly lie on the Sacrum of the Mother, but the Face does not; for it always (when naturally presented) is turned either to the one Side, or to the other, so as to have the Chin directly on one of the Shoulders.'

This the Doctor endeavours to prove to be right, by what he calls *plain Reasoning*; For, says he, *First*, It is evident, that the Head, from the Os Frontis to the Occipitis, is an oblong Figure, being flat on one Side, *Tab. I. Fig. 3*.

Secondly, That the Body, taking in the Shoulders, makes still a more oblong Figure, crossing that of the Head, *Tab. IX. Fig. 2*; so that, supposing the Woman might be so situated as to have the Child's Head to the right, and the Body to the left, the Child's Head would be directly on the Mother's Shoulder, and the Body would be directly on the Mother's Sacrum, which is the most natural and easy Position, and is sufficiently answered by Dr.

man on her Back, the Head coming into the World, is a kind of Ellipsis in a vertical Position; and the Shoulders of the same Form in an horizontal Position.

Thirdly, That the Pelvis is of an elliptical Form, from one to the other Part, *Tab. I. Fig. 1.* therefore, says he, if the Child presents with the Face to the Sacrum, the oblong Figure of the Head, *Tab. I. Fig. 3.* must cross that of the Pelvis; and if it were possible that the Head and Pelvis could be formed to each other, so as to admit of its Exit, it must of Necessity, from what has been said above, acquire another Form for the Admission of the Shoulders; which is very different from the constant Uniformity in all the Works of Providence.

From what has been said, continues he, it is evident, That when the Child is turned, so as to have the Chin on one Shoulder, all the above Objections are removed; for the Head and Shoulders are on a Parallel-Line, in respect of their Shape, and, at the same Time, both answer the Form of the Passage from the Pelvis.

These Arguments, supposing them true, might be of some Service to support the Doctor's Opinion; but his Data are wrong, and, indeed, are sufficiently answered by Dr.

Dr. SOUTHWELL, as we shall see presently.

It was observed, in describing the original and natural Posture of the *Fetus in Utero*, § 39. *Tab. IX. Fig. 1.* that the Chin lies on the Breast. OULD, therefore, in order to support his Opinion, should have shewn, from the Structure and Mechanism of the Parts, some probable Method of changing the original Posture of the Chin on the Breast, and turning it on one of the Shoulders. It cannot be the Womb, for that, in its quiet State, presses equally on all Sides the Child's Head, especially while the Waters are in the Bag; and when it begins to act, the first and greatest Efforts for the Expulsion of the Child are in the Bottom of the Womb, § 7. *Tab. V. § 40.* which presses directly on the Back-part of the Head, *Tab. IX. Fig. 1.* and turns it immediately downwards, with its Face towards the Mother's Back. Hence we see, that this Change of the Posture of the Chin cannot happen in the Child's Rotatory Motion in the Womb; and it is demonstrable, it can never (by the Powers of Nature alone) alter afterwards; for every Labour-Pain, as it presses the Chin more forcibly against the Breast, of Course must render the Translocation of the Chin to the Shoulder the more difficult. Nay, every candid and experienced Practitioner can attest, That when-

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ever he found the Child's Face turned to either of the *Ossa Iliæ*, the Labour was always both tedious and difficult, as may be seen by several Writers (u); and many Instances of the like Kind have fallen within my Practice.

OULD, by his Reasonings as above, from Ellipses coinciding with Ellipses, has been led into this Mistake, by confounding the Hypogastric Cavity, *Tab. 1. Fig. 1. Let. a*, made up of the *Ossa Iliæ*, *Let. c, c*, and lower *Vertebrae* of the Loins, with the true Pelvis, § 2. *Tab. 1. Fig. 2.* From which we may find, that there is no Necessity of supposing, that the Child's Chin, in all natural Births, must be turned to one of the Shoulders, in order to prevent the Head's intersecting with the Pelvis: More especially as the Head, taking it from the *Frontis* to the *Occiput*, is bigger, in general, than the Shoulders; the Dilatation, therefore, made by the Head, will more than suffice to give a Passage to the Shoulders, which, from their pliable Texture, § 48. will readily shape themselves to that Cylindrical Cavity the true Pelvis, § 2.

(u) La Motte, p. 240. And Heister, 2. De Partu Difficili, says: 15. In omni huius Infantum, ubi aliam partem quam Caput, se speciatim Verticem, ubicunque latus aliquod Capitis, ut Nares, Facies, Mentum, &c. invertendus. Mesnard's Guide des Accoucheurs, p. 276. takes Notice of the same Thing.

§ 51. I have shewn from sufficient Authority above, § 50. That whenever the Chin is on either Shoulder, it is preternatural, by impeding Delivery; because, in all natural Births, the *Apex* or Summit of the Head, *Tab. I. Fig. 4. Let. a. Tab. IX. Fig. 2.* always presents itself; which, going off slopingly posteriorly and anteriorly to the *Occiput* and *Os Frontis*, acts like a Wedge, in dilating gradually the Orifice of the Womb, as the Mother's Throws increase: Whereas, did the Head present with the Chin directly on either Shoulder, the *Apex* could not then be presented, but rather the upper Part of the Hairy Scalp, *Tab. I. Fig. 4.* which would make a Surface too large to be insinuated into the small Dilatation of the *Os Uteri*, in the Beginning of Labour, without a much greater Force than is required in all natural Births. Besides, was the Chin to be on either Shoulder, the *Apex*, instead of being in the Center, would point to one Side of the *Pelvis*, and, consequently, must hinder the Birth. This is very evident, by only viewing *Tab. I. Fig. 4. Let. 2.* which Part, if the Chin came sideways, would not be in the Middle.

Notwithstanding what I have said above, there are some particular Cases, wherein *Osio's* Method of turning the Chin is necessary, I but then that is only where the Mother or Child is preternaturally made; as

will

will be evident from the following Observation.

OBSERVATION IX.

In 1738, the Wife of an Inn-holder in this City (York) fell into Labour at her full Reckoning, of her first Child: Her Pains came in a slow and regular Manner at first, and then grew as violent as usual and necessary, and the Waters came away, but the Child did not advance in the least; soon after which the Pains rather abated, and the Woman got some little Sleep; and then her Pains increased as violent as ever, the Child still remaining as before, but the Patient began to flood; upon which I was called in. Upon searching, I found the *Os Uteri* sufficiently relaxed, the Woman being almost spent; but the Passage betwixt the *Os Sacrum* and *Os Pubis* so streight, that it was impossible for the Head to get into the *Pelvis* in its natural Posture; wherefore I turned the Head, so as to place one Side of it against the *Os Sacrum*, and the other facing the *Os Pubis*; when, after a Pain or two the Head advanced into the *Pelvis*, and being replaced, with the *Apex* in the Middle of the Passage, another Pain or two brought forth the Child, which though a small one, was very healthy and strong. I therefore told the By-standers, that whenever she went

went again to her full Reckoning, the Labour would be very dangerous and difficult, if the Child was large; which accordingly proved true in two succeeding Births, to both which I was called in.

I have frequently met with these sort of Difficulties, but could not always assist the Mother this Way, because the very Side of the Head has been too large to be forced into the *Pelvis* by the Mother's Throws. From all which it appears, that to get the Child's Head into the *Pelvis*, in some Cases, it is necessary to turn the Chin towards a Shoulder; but after it is advanced therein, then the *Apex* must be replaced in its proper Situation, or the Birth will be rendered more difficult.

§ 52. After the Birth of the Child, § 48, and the tying the Umbilical Chord, if needful, § 49. the next Thing is to extract the *Placenta*, which is certainly best done by introducing the Hand into the Womb immediately (in a general Way) or as soon as may be after the Birth of the Child: *First*, Because then both the *Os Uteri* and *Vagina* are sufficiently dilated, as the Child is so much larger than the Hand; whereas, in a little Time, it frequently happens that both are so closely contracted, as not to admit the Hand without great Pain and Labour. *Secondly*, By this Introduction of the Hand, the

the skillful Artist discovers whether there be any more Infants to come forth. *Thirdly*, Whether there be any Mole, or other preternatural Substance remaining in the Womb. *Fourthly*, Whether the Placenta adhere to the Uterus, or not; if the first, then the Operator must separate it from the Womb, by gently introducing his Fingers betwixt the Uterus and Placenta. *Fifthly*, In withdrawing the Hand in the Form of a Scoop, the Operator has it in his Power to cleanse the Womb from any Fragments of the Membranes and Placenta, and from all Clots of Blood, that frequently remain in the Womb after Delivery, and occasion After-Pains. *Sixthly*, By following this Practice, the Operator is certain to prevent a Descent, or *Prolapsus Uteri*, which but too frequently attends the imprudent Tugging at the *Funis*; which in some particular Cases, § 29, 30, and 49. by breaking, might occasion a great Flux of Blood. *Seventhly* and *Lastly*, The Operator hereby informs himself of the Condition and Situation of the Womb, and whether it be disposed to contract itself in a regular uniform Manner, which he greatly assists, by the convex Horn of his Hand, now in the Womb. All which are Matters of great Importance towards the Recovery of the Patient. The Operator should not follow the Natural spring, for that will conduct his Hand

to the very thickest Part of the *Placenta*, and that too within the Membranes; but he should slide his Hand along the upper Side of the *Vagina* (which ever it is) and introduce his Fingers betwixt the Membranes and the Womb, and then with very little Trouble he will separate the whole *Placenta*; and may clear the *Uterus* directly, always taking Care not to scratch the Womb with his Nails. The Manner of extracting the *Placenta* some considerable Time after Labour, when the Womb has contracted, shall be shewn in its proper Place.

§ 53. If an Operator could be certain (which is very rare, and scarce possible) that neither another *Fœtus*, Mole, or any other Substance was still remaining in the Womb, where he can be sure, that the *Placenta* is intirely detached from the *Uterus*, and that upon pulling the Navel-string it would come away whole, and that no violent Flooding, or other pressing Symptoms offered, then indeed he might venture upon the Practice of tugging at the *Funis*: But where the Case is, and generally will be otherwise; where it is very difficult for the Operator to be certain of these Matters, before he introduces his Hand, and where the *Placenta* does not immediately follow the Child, then, I'll venture to say, it is absolutely necessary to introduce the Hand, and artificially to separate and extract the *Placenta*,

Placenta, § 52. which may be done with the greatest Ease to the Patient, without inhumanly teasing the poor Woman to press to Stool, sneeze, or vomit, as some injudicious Practitioners do.

§ 54. The chief Arguments made use of against the introducing the Hand in this Manner, § 52. are, *First*, That it gives great Pain. *Secondly*, That there is a Difficulty in finding out the *Placenta*; and, *Thirdly*, When found, there is Danger of leaving some Fragment behind, in separating it.

The *first* Objection is already answered, in § 52, 53. and every the least Proficient in Midwifry knows, that not one Woman in five-hundred is ever sensible of the Matter, because of the greater Dilatation that preceded it, and because of the copious Discharges of Blood and *Mucus* that follow.

The *second* Objection surprises me not a little, because any Botch in Midwifry can, by introducing the Hand, guided by the *Funis*, easily distinguish the Womb from the *Placenta*; although this is not the best Method, as I have shewn above, § 52.

The *last* Objection carries no Weight with it, for there is not the more Danger of leaving any Fragment of the *Placenta*, when the Hand is introduced, than when the *Placenta* is tugged out by the *Funis*; and it is not less dangerous to leave the

§ 155. The Womb, after the Extraction of the *Placenta* and every other Substance from within, collapses, or rather contracts again, but not, as *QUILD* says (*w*), 'by the great Loss of Blood,' but because the Womb is no longer extended by any Substance within it. For the Flow of Blood is effected by the Contraction of the *Uterus*, especially by *Ruyseh's* Muscle at the Bottom of the Womb, § 7. meeting with no Resistance from within, which endeavours to return to its former State; by which Means, the Blood, which was contained in the Sinuses and spongy Substance of the Womb, § 7, 8, 9, 10. is, as it were, squeezed out: This, together with the little Acquisition of fresh Blood, till the spongy Substance is quite contracted, is what forms the *Lochia*, § 155.

By being acquainted with this Muscular Structure, § 7. we also come to know how the *Placenta* separates more easily after the Child is born, than while it is yet contained in the *Uterus*; for, as long as the Child remains therein, the Womb is prevented from contracting; upon which, and the Want of a Muscular Contraction in the *Placenta*, the Separation of the After-birth depends, if left to Nature: And as the Degree of Contraction of the *Uterus* will be proportional to

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the Distraction of its Muscular Fibres (if not too far extended) we see another Reason why the After-births of Abortions are more difficultly brought away, than those of more grown Children.

This will appear more evident from § 7. if we consider, that the more a Fibre is extended, so long as it can exert its elastic Force, the stronger it presses or pulls, as it were, to the Point to which it is fixed. Whence it follows, that the stronger these Muscular Fibres are, the sooner they contract the Womb, and the new Impediment to the succeeding Blood will, therefore, sooner take Place; whence it follows, that there is a lesser Quantity of the *Lochia*, although the Discharge is more sudden in strong, than in those of a weaker Constitution, & *vice versa*; which is confirmed by daily Experience.

This Contraction of the Womb, in some Women, is so sudden and so strong, as scarce to be credited but by such as have experienced it. For in searching for the Clots of Blood, &c. immediately after the Birth, the Womb, which not half a Minute before, contained the Child, &c. contracted so close, from that Part where the *Fallopian Tubes* enter in, *Tab. IV. Lett. 1, 1,* to the *Fundus*, that it entirely embraced my Hand, which I held in as round a Form as I could; and that Part markt *1, 1, Tab. IV.* contracted close

my Wrist, and was the straitest Part of the *Uterus*, from which to the *Os Uteri* was least of all contracted. This I have often met with, and it accounts for the Case of a Woman near *Doncaster*, to whom, in 1732, I was sent for:

OBSERVATION X.

This Woman had been delivered about twelve Hours, but the *Placenta* could not be got out by the Midwife, who had done her utmost by pulling at the *Funis*, which had broke twice; notwithstanding this, the Patient did not flood at all. I introduced my Hand, with some tolerable Ease, into the *Os Uteri*, but could find no *Placenta*, but soon found the remaining Piece of the *Funis*, almost closely embraced by Part of the *Uterus*: I introduced one Finger with some tolerable Ease; but it was with the greatest Difficulty that I introduced the others, and never had so much Trouble in extracting any *Placenta* as then, entirely occasioned by this Part contracting so soon and so strongly: The Woman recovered very well. But notwithstanding this, I would not have the Reader mistake me: I am not saying the Womb of all Women will so strongly contract, in so short a Time; for I have known quite the reverse.

DEVENTER (x) says, 'Puerperam aliquando defunctam octavo, in aliquot, vel nono post partum die, cultro apertum, uterum tam exiguum, & naturaliter adeo constitutum mirabundus inveni, quasi Puerperæ non fuisset.' And a little above, he says: 'Partu jam edito, & Secundina exclusâ, si manum aliquamdiu in utero retinueris, senties illum circa manum contrahi & occludi.'

Seeing the Resistance of the Blood in the Descending *Aorta* is taken off upon Delivery, and that not only the *Placenta* separates with more Difficulty, when the Womb has not contracted itself, but also a greater Hemorrhage must happen, it will appear no Wonder that weak Women should be so liable to faint at this Time, especially if they are kept in an erect Posture, as when delivered upon the Stool; whence we see the Advantage of delivering Women lying.

§ 42. Hence also we are directed to prevent these Swoonings or Faintings by the Assistance of a Girdle or Bandage, which is confirmed by LA MOTTE, *Observ.* 382. *Cap.* 8. for he says, The Midwife, in order to preserve or gain a fine Shape after Lying-in, had made a tight Bandage about the Patient, whose *Lochia* stopped almost entirely, but, the Bandage being removed, the Fever

(x) *Art. Obstetric. cap. 9. p. 44.*

abated considerably in a very little Time, and the *Lochia* came down better, and she got well in a few Days.

§ 56. Having given an Account of the chief of what is necessary in natural Births, where there is only one Child, I shall now mention what is to be done where there are two or more.

As soon as the first Child is born, and the Navel-string is tied and cut, as is ordered before, § 49. the Operator should introduce his Hand immediately, as directed, § 52, 53. by which he will find, if there be another Child; in which Case, he must break the Membranes (if not already burst) without waiting for Pains, there being a sufficient Dilatation of the Or *Uteri* by the first Child, and, as the Womb cannot be quite contracted, there will be Room to turn the Child, with Ease to the Operator, and with little Pain to the Woman, after which it may be extracted by the Feet. Where there are Twins, the Mother is generally bigger during Pregnancy, and is, *ceteris paribus*, more liable to Swellings of the Legs, Thighs, and *Labia Pudendi*, § 69. and she generally falls into Labour about a Fortnight or three Weeks before her full Reckoning. Sometimes it happens, when there are Twins, that one of them will present with a Foot, as in *Tab. X. Tab. XI. Fig. 1.* there-

therefore the Operator should examine which it is, by searching for the great Toe; he then must slip his Fingers up one Thigh to the Parts of Generation, and so down the other, till he can get hold of both Feet; for without this Precaution, he might take hold of a Foot of each of two different Children, which may be of bad Consequence, by endeavouring to bring them both forth at the same Time. The same Precaution is also necessary, lest one Child should be afraid of its own Navel-string, or of the other's, and might break it too near the Belly.

Having hold of the Feet, *Tab. X. Fig. 2.* draw them forwards till the Hips appear; and if the Face be not turned towards the Mother's Back, as soon as the Hips have passed between the *Os Pubis* and *Sacrum*, turn the Child; but this, I think, would be better done before the Hips have passed between the *Os Pubis* and *Sacrum*, lest, if the Child should come with a Side to the Mother's Back, and the Passage betwixt the *Os Pubis* and *Sacrum* should prove very narrow, its Hips and *Ossa Ilie* might suffer.

The Child being turned right, advance it till you have got so far as that you may introduce a Finger into the *Vagina*, to reach so as to thrust it over one Shoulder of the Child; and then gently slide down, first one Hand and Arm, and then the other; which

may be done in two ways, *Tab. IX. Fig. 1. & 2.*

may be easily done by bending the Finger like a Hook, as near the Articulation of the *Ilia* and *Humerus* as possible; and by gently drawing it forward, it will easily be extracted. The Arms being thus brought down, the Child may be gently drawn by the Hips (which should be wrapt in a Cloth, lest the Operator's Hands should slip;) and if the Child does not readily and easily advance, the Operator must gently slide one Hand along the Child's Breast, with his Palm towards it, which will also support it; and endeavour to put a Finger into its Mouth, by which he will prevent the Head from sticking by the Chin: The other Hand should be upon the Child's Back, with a Finger bent over each Shoulder, on each Side of the Neck; Thus it must be drawn forward, moving it from Side to Side, till it is extracted. This is the common Practice; but, considering the tender Union of the two Sides of the lower Jaw, there is great Danger of separating them, if the Operator wants either Care or Skill; for he should not pull the Jaw with any Violence, but only guide it a little downwards towards the Child's Breast. The following Method I have found, by repeated Experience, to be the best both for Mother and Child. As soon as the Child's Shoulders have passed the external Orifice of the *Vagina*, with its Face to the Mother's Back, I slide my Hand,

Hand, with its Back to the Child's Breast, till I can introduce a Finger above the Shoulder by the Side of the Neck, that the End thereof may be thrust against the Back of the Child's Head, and then of Course the Chin must be pressed towards the Breast, while with the other Hand I extract the Child: By this Means, both the Danger of separating the two Sides of the Jaw, and of tearing the *Perineum* are avoided; wherefore I would always give Preference to this Method, which will scarce ever fail, if properly put into Practice. In some Cases, as aforesaid, § 51. it may be proper to turn the Chin on to one of the Shoulders, till the Head passes betwixt the *Os Pubis* and *Sacrum*, and then to replace it again; but that will be difficult to do, when the Feet come foremost.

The rest of the Children are to be extracted the same Way, always taking Care of the Navel-string, as was ordered before, § 49. without forcing away any *Placenta*, while there is a Child left within, to avoid too great a Flux of Blood.

When there are Twins, as they generally are less than other Children, they may often be safely extracted without fetching down the Arms with the Finger, as here directed; in which Case, the Arms come out, one on each Side of the Head: Nay, in some Cases, where there is only one Child,

Child, if very bulky about the Chest, and the Mother pretty strait, it may be less Prejudice to her, to extract the Child with its Arms parallel to the Head, than to force them down, as in the Manner above directed; as is evident, if we consider the Make and yielding State of the Bones of the Head, and the Flexibility of the Joints of the Limbs, § 48. for the Bulk of the Shoulders, in this Case, is squeezed, as it were, on each Side of the Neck of the Child; and the Bulk of the Child's Arms will not take up so much Space, as the Hand of the Operator, added to that of the Child's Breast and Shoulders.

§ 57. OULD (y) says, that, 'If there be a second Child, you will perceive it by the Mother's Pains continuing, and the Gathering of new Waters.' But he is mistaken; for I have known, where I have been sent for, a considerable Time after the Delivery of the first Child, yet the Woman had no Appearance of regular Pains, nor of the Gathering of new Waters. This was the Case mentioned in *Obs. III.* § 30. which may be easily accounted for, if we look back to § 45. and consider what has been said of the Fabric of the Womb, § 7. For we shall then find, that upon the Delivery of one Child, the Womb, in some Women,

(y) Midwifery, p. 52.

must

must have Time to contract, to press down the other Child, so as to force the Waters to gather; which is done entirely by the Pressure of the Womb and the Diaphragm and the Abdominal Muscles upon the Womb.

§ 45. Besides, where there are Twins, it often happens, that one of them lies much higher up than the other; which is the Occasion, that where all is left to Nature (as is mostly the Case with Female Adventurers in Midwifry) that the Woman is some Days before she brings forth the second Child; whence we may easily conceive what Miseries the poor Patient must undergo, for Want of an easy Bed; the Fear of undergoing another Labour, and the Want of Rest; together with the Fever, and other Complaints which may arise from the *Placenta*, every Day growing more putrid.

There have been Instances, where it was supposed that some Women have gone ten, others eleven Months, or more; but, for the Reason given before, § 37. and for several others, the Authorities which have fallen in my Way, are so defective, that I shall not trouble the Reader with them.

§ 58. I shall, in the next Place, mention some Things, which help to retard, but make Labour tedious, although every thing else be right.

First; It often proceeds from the Weakness of the Mother; she not being able to assist her Pains by forcing downwards; in which Case, she must be supported rather by strengthening Broths, than by heating Cordials, which are too often given by ignorant Women, who thereby frequently bring on Floodings and violent After-Pains, § 132, 133, 134. as well as feverish Complaints, with Pains in the Head, &c. If the Patient's Spirits be too much exhausted, and her Pains grow very short, or of little or no Advantage, then a proper Opiate is of surprising Service; for, while the Medicine operates, the Patient is lulled asleep, and the Pains are quite removed; but when the Narcotic Quality is gone off, she revives with new Vigour, and the Pains grow strong and lasting; which soon brings on the Delivery. Although this Practice of giving Opiates is not very common (as, indeed, it ought always to be done with Skill and Caution) yet Nature, in the Case above-mentioned, seems to point out this Method to us; for we constantly find, that when the Pains are short and weak, if the Patient gets but a short Sleep of a Quarter, or Half an Hour, that the Pains immediately after grow more vigorous and more lasting.

Secondly, Costiveness may be said to retard Labour; for the *Intestinum Rectum* must be much stuffed with Feces, when, perhaps, the

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the Patient does not go to Stool for a Week before Labour, as it often happens; and then the Exit of the Child's Head is hindered. This Evil may be removed by cautiously giving a Clyster (or two, if necessary) a little before the Woman expects to fall into Labour, § 41. so that the hard *Fæces* may come away from her before the Pains are too strong.

Thirdly, The Dryness and Constriction of the Parts is sometimes another Hindrance to Delivery; for the *Vagina* has been found so dry and so contracted, that it is with Difficulty it will give Passage to a Finger or two, § 41. in this Case, warm oily Injections, both into the *Vagina* and *Rectum*, are of greatest Benefit.

Fourthly, Labour is sometimes retarded by the Thickness and Hardness of the Orifice of the Womb, which hinders its Dilatation: In this Case, all that the Operator can do, is to introduce one Finger, and then a second, with the greatest Caution, into the Orifice, before the Pains begin, because, when they are advanced, the Membranes and Waters will be pressed so hard against the Neck of the Womb, that the Introduction may endanger the Breaking of them before the proper Time. When one Finger or Fingers are thus introduced, the Orifice must be gently dilated, by moving them round its internal Surface, which must

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be done with the greatest Caution, lest the Orifice should be torn, § 152. and lest an Inflammation of the Parts should be occasioned, which would contract the Orifice by the Swelling of the Parts. This Practice ought never to be followed, but when the Mother floods, the Membranes are broken, or when the Child is misplaced, that it does not press sufficiently against the Orifice of the Womb; for, let the Operator do what he will, the Pressure from within will dilate the Orifice much sooner and safer than he can, § 152.

Fifthly, A Stone in or near the Neck of the Bladder will also impede the Birth of a Child, by straitening the Passage between the *Os Pubis* and *Sacrum*; this may be known by the Touch, as well as by the preceding Complaints. In this Case, the Stone cannot, sometimes, be removed without setting the Woman upon her Head; and then, with the Finger, to endeavour to thrust back the Stone, so as to give Room for the Child to advance.

Sixthly, For the same Reasons above, the Child cannot advance, when the Bladder is too much extended by Urine, which cannot pass, because the Child presses the Neck of the Bladder too hard against the *Os Pubis*; or from some other Cause, which might obstruct the *Urethra*. In this Case, the Catheter is the only Remedy, §

67. This every Operator should be careful to enquire into, to prevent the Injuries which might otherwise ensue.

Seventhly, When the *Chorion* and *Amnios* are too strong and thick, the Birth will be retarded, § 23, 47. This may be easily known and remedied by a skilful Artist, who can tell when the Womb is sufficiently dilated, and may soon break those Integuments, by introducing two Fingers betwixt the Inside of the *Uterus* and the Bag, and bending them a little towards the Child, then thrust the End of the Thumb against the Membranes, betwixt the two Fingers, and the Membranes will soon and easily be broken. This Method is as easy, and much safer than the Introduction of naked Scissars to cut the Membranes; which bad Practice is too frequently used. By the same Method the Umbilical Chord may be broken within the Womb.

Eighthly, There are also some Disorders of the Womb and *Vagina*, such as a *Schirrus* or Cancer, which, by hindering their Dilatation, will render Labour difficult, if the Woman should go to near her full Reckoning. This Case is, indeed, very desperate, because the Part must be cut or laid open.

Ninthly, When the Umbilical Chord is so short, that the Child cannot advance without separating the *Placenta* from the *Uterus*, the only Remedy is the Caesarean.

of breaking the Chord; as happened in the following Case.

OBSERVATION XI.

In 1748 I was sent for to a Patient at Healy-Mann, who had been in Labour about thirty Hours; at my Arrival, upon Enquiry, I found the Patient went on at first as well as could be wished, and that the Child's Head advanced for some Time, and then stopt for several Hours, without ever advancing any farther: Upon searching, I found the Head at Liberty, being able to put my Finger quite round it. I then examined the Neck, lest the Umbilical Chord should be twisted about it, but found all clear; whereupon I concluded, that it stuck at the Shoulders; but I was soon undeceived, when I introduced my Finger: for I found the Os Uteri easily to be extended, and the Shoulders of the Child entirely at Liberty; wherefore I did imagine, that the Umbilical Chord must be too short, and then I reached the String, and found it fully stretched with the Placenta strongly adhering to the Womb. I therefore broke the String, and delivered the Woman, and brought away the After-birth immediately. I found the Umbilical Chord was not above ten Inches long, and twice the thickness of my Thumb, very hard.

hard in some Places, and knotty, as it is commonly called. Since this Time I have had two others, but the Chords were somewhat smaller, § 137. Several of the like Cases may be found in MAURICBAU, *Obs.* 401, 406, 549, 612, 640, 662, 687. HIL-DANUS, *Obs. Chirurg. Cent. 2. Obs.* 50. and many Others.

On the other Hand, I have met with two Cases, where the Umbilical Chord hindered the Birth of the Child, by being so long that it was near three times wrapped or twisted round the Child's Neck; the worst of the two was the following, the Child being dead, but the other was born alive, § 148.

OBSERVATION XII.

In 1739, I was sent for to a Person at *Curwood*, who had been some considerable Time in Labour; and although every thing promised well at first, yet, when the Child's Head had passed the Os Uteri, it advanced no further, although the Mother's Pains were strong; whereupon I was sent for; and finding the Head no way fixed, I introduced my Finger a little further, and found the Umbilical Chord fast about the Child's Neck. I therefore twisted that Part of the Chord, which reached from the Child's Neck to the *Placenta*, about my two Fore-

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Fingers,

Fingers, and with my Thumb broke it, and then withdrew my Hand, when the Child soon followed, by the first Pain the Mother had, without any Difficulty; upon which, I brought away the After-birth, &c. as usual.

Having mentioned every thing material from the first Impregnation of the Ovary, to the Delivery of the Woman, in a natural Way, I think it incumbent upon me, in the next Place, to take Notice of the Diseases with which pregnant Women are liable to be afflicted, with their Rise, and the Method of removing, or relieving them, which shall be the Subject of the Second Part.

The End of the First Part.

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ESSAY
TOWARDS A
NEW SYSTEM
OF
MIDWIFERY.

PART II.

Of the Diseases of Pregnant Women.

§ 59. **O**F the Diseases of Pregnant Women, some arise solely from the Stoppage of the Menstrual Flux, others from the Motion and Bulk of the Fetus, Secundines, and Waters.

From the first Cause proceed Vomiting, Loss of Appetite, Nausea's, Faintings, Vertigo's, Pains in the Stomach, Groin, Reins, *Mammae*, and Shortness of Breath, and Coughs; all which generally abate about

the third Month, or sooner, and then give way to the Complaints of the second Class; when the Appetite also seems to return again for a Time, and sometimes to increase.

From the second Cause proceed also Vomitings, Shortness of Breath, and Coughs; Incontinence and Suppression of Urine, or a Difficulty in making Water and going to Stool, and Costiveness; Pains in the Back and Groin; Varices, Piles, and Swellings of the Legs, Thighs, and Pudenda.

§ 60. These Vomitings, § 59. No. 1. seem to be occasioned by various Causes, which require different Methods of relieving them.

First, then, they may be caused by too great a Distention of the Blood-Vessels; whereby the Nerves may be so pressed, as to occasion that Convulsive Motion of the Diaphragm, Stomach, Bowels, and Abdominal Muscles, which we call Vomiting.

Secondly, This Motion may be occasioned by the Remains of indigested Food, being either in too great a Quantity, or by being too acrimonious, especially of Acescent Diet, which, for Want of a good Digestion, may become acid, and then irritate the Stomach to throw out its Contents: this is known by the acid Taste and sour Eructations. One or both of these are generally the Cause

of Vomiting in the two, or, perhaps, three first Months of Pregnancy. But,

The *second* Cause may proceed from the too great Extension of the Womb, § 59. No. 2. which sometimes will rise over-high in the *Abdomen*, especially in People whose Bones, that form the lower Part of the Hypogastric Region, are too stiff, or, as it is commonly called, are *strait-bird*; for then the Womb must rise upwards, and the Child's Head must be pressed very strongly against the Stomach; because the Abdominal Muscles, near their Origins or Insertions, cannot be extended so easily, not so far, as nearer their Middle, or about the Umbilical Region; by which the Stomach will be compressed, and the Peristaltic Motion of the Bowels will be interrupted.

The *first* Cause will generally yield to Bleeding; when and how to be done, see from § 136. to § 142. inclusive.

The *second* Cause may be removed by the Patient's living upon a thin, moderate Diet of the antacid Kind, with gentle aromatic Cardiacs, Absorbents, and Stomachics, that do not stimulate too much: But, if the Acrimony be of the Alcaline Nature, as when the Patient vomits up Bile, &c. then the Diet should not be as above, but of the Acefcent Class.

Sometimes, indeed, Vomiting may be of Use; for, by evacuating Part of the

Food this Way, there will be less Chyle sent into the Blood-Vessels, which therefore will not be so distended and full. But notwithstanding this, I would advise every Pregnant Woman to prevent this Complaint as much as she can, to avoid an Abortion, *§ 122, 132, &c.*

A Vomiting from the *second Cause* is not to be cured till the Patient be delivered; and all that she can do, is, to keep herself in an erect Posture as much as she can, and to distend the Stomach as little as possible; wherefore her Diet should be thin, and of easy Digestion; which she must take in small Quantities and often.

OBSERVATION XIII.

In May 1749, I was sent for to a Person, who, they said, had got a very hard Swelling at the Pit of the Stomach, and could not lie down. At my Arrival, I found the Child's Head (she being within a Month of her Reckoning) as high as the *Processus Empharicus*, projecting very much upwards. The Woman vomited frequently, especially if she eat any thing solid, altho' no bigger than a Walnut; wherefore I ordered her to take no Kinds of Food but Spoon-meats, and a gentle Opiate for two or three Nights, which she continued to the End of her Term, having only now
gentle and

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and then a slight Puking, or Provocation to vomit. I told her Friends, that as the Child's Head was so high up, and so strongly compressed, I did imagine the Woman would have a preternatural Labour, because there was not Room for the Child to turn with its Head downwards; which accordingly happened as I had prognosticated; and I was sent for to deliver her. The Child presenting with its Buttocks, I soon got the Feet, and brought forth a lively living Child; and then all her other Complaints ceased; she had but little Water in the Bag.

§ 61. The Appetite very often, nay, generally, is depraved in the Beginning of Pregnancy; for the Blood-Vessels being so much distended, § 59. No. 1. by pressing the Nerves, may hinder their Action, so as to prevent their Use in causing the Sensation of Hunger. Sometimes also this may proceed from the little Consumption of the Humours, the Vessels being full, when Nature has not so great a Demand, as the Child consumes so little. What the Mother seems to perspire less than usual, appears from the scolding and the Drops, which Pregnant Women so often complain of. This is relieved by taking away the Cause by Venesection, and giving the Patient

gentle, aromatic Stomachics, and a Diet of easy Digestion.

§ 62. For the two or three first Months of Pregnancy, some Women are very subject to Faintings in a Morning, when they have fasted the longest; wherefore Nature seems to point out the Method to be taken to prevent this Complaint, which may sometimes occasion Abortion, § 130. I therefore, in these Cases, advise the Patient to take some Spoon-meat, with or without some aromatic Stomachics and Stimulants, as soon as she awakes, after Two or Three o' Clock in the Morning at farthest; which I have found of great Service, if regularly attended to. For Fainting is only the Lessening of the Motion of the Heart, as is evident from the Feebleness, and Lowness of the Pulse, which is occasioned by different Means; as, when the Veins do not bring Blood enough to the Heart; when the Coronary Arteries do not receive the Blood; and when the Nerves of the Heart do not perform their Part; all which may be remedied by the Method here laid down, especially if proper Cordials are used at the same Time to stimulate the Vessels.

§ 63. A Vertigo is, when Things seem to turn round; and frequently is attended with a Trembling of the Limbs at the same Time: This may proceed from too much Blood pressing upon the Optic Nerve and Brain, or from

from too great a Viscidity or Lensor of the Blood: Both which may be removed by a proper Venesection.

§ 64. If the Pains in the Stomach be attended with acid Eructations, then they proceed from the Diet turning sour; in which Case, the Patient must be treated as in § 60. No. 2. But sometimes they proceed from the Blood-Vessels being too much distended, either by a *Plethora*, or from the Pressure of the Child against the Descending *Aorta*. If from the First, Nature indicates the Cure, by lessening the Quantity of Blood; and in the latter Case, the Patient should lie as much as she can on either Side. The Pains in the *Mammæ* are accounted for in § 129. and also how they are to be relieved, in § 162.

§ 65. It is no Wonder that Pregnant Women are frequently troubled with a Shortness of Breath and Cough, even in the Beginning of Pregnancy, especially if their Lungs are not good, and if they are subject to Asthmatic Complaints; because, as the *Menses* are suppressed, and no other Evacuation is made, nor the Blood any other way lessened, the Vessels must be filled in every Place: Hence the *Vesiculae Aereæ* must be compressed, and cannot easily expand; and at the same Time, the Vessels serving the Intercostals and other Parts of Respiration are oppressed. This Complaint is easily removed by Bleeding; but that *Dyspnoea*, which

which is occasioned by the Extension of the *Uterus*, is not to be removed entirely without taking away the Cause, or, by delivering the Woman. The Patient, however, ought to keep as quiet as possible, both as to Motion and Talking, and from Coitus and Coition.

The Complaints proceeding from the second Cause, § 99. No. 2. may admit of some Relief, but rarely a perfect Cure, till the Woman be delivered. The Incontinence of Urine arises from the Compression of the *Uterus* against the Bladder, and thereby forcing out the Water. And the Suppression of Urine is occasioned by the Pressure of the Womb against the Neck of the Bladder, whereby no Water can pass. In both which Cases, nothing but Taking off the Pressure upon the Part can give Ease, either by a Pessary, or by lying in Bed; but the last is only a temporary Relief, because, when the Woman rises, the Womb will fall down again. There will appear very clear, when we consider, that as the Neck of the Bladder adheres to the *Perina*, so, by the Expansion of the Womb, the Bladder must give way, and cannot hold much Urine; and when the Urine ascends, it compresses the Kidneys and Ureters; and as only a little Urine is in the Bladder, it sometimes lies long there, and becomes very acrid, and de-
 taches the *Mucus*, whence it corrodes and
 stimu-

stimulates, so as to occasion a Disposition to be making Water frequently.

The same Causes likewise, by compressing the *Rectum*, will occasion a Difficulty of going to Stool, and Constipation, which must be, in that Case, removed by the same Means: For it is evident, the longer the *Feces* remain in the Intestines, the harder they grow: And as the Woman cannot inspire, so as to exert her usual Force to press downwards, we are naturally directed to use lubricating Clysters, when she wants a Stool.

§ 67. The Distention of the Womb also frequently occasions Pains in the Breast, Kidneys, Groin, Stomach, and *Mammae*, by compressing the Kidneys, Bladder, or the *Uterus*; for, as the *Uterus* has Nerves from the *Par Vagus*, which sends Branches also to these other Parts, when one Part of the Nerve is compressed, the other is affected: If this Pressure should be occasioned by too great a Fulness of Blood, then Venesection will give Relief; but if it be from the Weight of the Womb, that must be removed, if possible. This sometimes may be accomplished by the Patient's lying on either Side in Bed, and sometimes by a Rellary.

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OBSERVATION XIV.

In 1748, I was sent for to *Helmestly-Blackmore*, above twenty Miles from *York*, to a Patient, who was about four Months gone with Child: She complained of a violent Bearing-down, and very acute Pains in the Back and Groin, and frequent Vomitings, that strained her very much; and that she could not make any Urine, without exerting all the Force she was able, and then only about a Spoonful came away at a Time, and that too seemed to scald her, as she thought. About three Weeks before she sent for me, she got a Fall from a Horse, and some of these Complaints soon after ensued. I searched her, and found the *Uterus* actually within the *Pelvis*, and the *Os Tincæ* was very near the *Pudenda*. After placing her in two or three different Positions, I tried, by a gentle Force, to raise the *Uterus* higher into her *Abdomen*, but found it no easy Matter to do: I then used the Catheter to empty the Bladder, that I might have more Room to reduce the Womb to its proper Place; and to my great Surprise, took from her above three Quarts of Urine, besides what was spilt: After which, I soon raised the *Uterus* above the *Pelvis*, and kept it in its Place by a Pessary, which she

wore

wore till the Time of Labour, when she brought forth a living, but weakly Child: After this, all her former bad Symptoms left her.

§ 68. The *Varices* is only a Distention of the Veins, which, not being sufficiently Elastic, and not being included in or amongst the Muscles, do not propel the Blood with sufficient Force to circulate; and, as they have Valves, the Pressure of the *Uterus* upon the *Iliac Veins* often swells them very much. These are not to be relieved, but by removing the Cause, and sometimes wearing a laced Stocking, Bandage, or the like.

§ 69. It frequently happens towards the End of Pregnancy, and sometimes sooner, that the Legs and Thighs of the Woman swell very much, and are *oedematous*; which is occasioned from the Pressure of the *Uterus* preventing the Return of the Lymph.

§ 71. In this Case, nothing can be done as a Cure before the Cause be removed, and in the Interim, the Patient must either lie in Bed, or sit with her inferior Limbs in a horizontal Posture, and wear laced Stockings, to keep her easy, and to prevent the Fibres from being too far extended, so that they lose their Elasticity.

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When the *Labia* are swelled, especially to any great Degree (which proceeds from the same Cause), then the Patient must be fomented with restraining Fomentations, and restraining Cataplasms must be applied, and dobed up tight to the Part with proper Compresses and Bandages.

Some indeed, recommend Diuretics immediately given, and Scarifications on the *Labia*. But I can never agree to such Practice; for the First may endanger the Bringing on Labour before the Humor be disposed, which may be attended with bad Consequences; and the Last may endanger a Mortification.

OBSERVATION XV.

The worst Case I ever met with, of this Kind, was a Person who lived at Rybar, twelve miles from York; she was but eighteen Years of Age, and was within a Month of her Reckoning. Her Legs and Thighs were monstrously swelled, and the *Uterus* was so large, that the Patient could not lie except on her Back, and stretch out her Legs and Thighs wide enough without compressing and crushing the *Uterus*; which she attended the Legs much to one side, and the *Uterus* raised the Head, so that she could not lie down, and she was obliged to give Blood.

Room

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Room for the Tumor sideways. In this Condition I found her, but with Pains also in her Body, which made me apprehend she might fall into Labour, before any thing could be done to disperse the Tumor. She was but of a feeble Constitution, and had a weak Pulse. I ordered a restraining Cast-Plaster, with a proper Compresse and Bandage, outwardly; and an Opium inwardly. The next Morning her Pains were quite gone, and the Tumor much lessened: She continued this Method for three Days, and the Labia were so reduced, that, had she continued a few Days longer before she fell into Labour, in all Probability, they would have been near their proper Size; but, although they were greatly reduced, they yet were so large as to make the Entrance into the Vagina narrower than it should be. In this Condition she fell into Labour. I was sent for directly, but did not get to her till she was delivered of a living Child. I examined her, and found the Perineum lacerated very much, which mortified in four Days, notwithstanding all the Care that could in such Cases be taken.

§ 70. Whoever will consider that Part of the Rectum is pressed between the Vagina and the hard Feces within the Gut, may easily account for the Pile; because the Blood

Blood is, in part, prevented from returning, and therefore must press laterally, and appear outwardly, nay, and sometimes burst: These, after the Delivery, very often go away on their own Accord, or with but little Help; and, for a temporary Relief, Vesications and Fomentations, and sometimes Opening the swelled Part, will make them tolerably easy.

The End of the Second Part.

The End of the Second Part.

The End of the Second Part.

The End of the Second Part.

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AN
ESSAY
TOWARDS A
NEW SYSTEM
OF
MIDWIFERY.

PART III.

I SHALL, in the next Place, give a full Account of what is to be done for the Assistance both of Mother and Child in preternatural Labours, where the Child cannot come forth without the immediate Aid of the Operator's Hand, either with or without Instruments; the Cases wherein they are to be used, and what Instrument is most proper for each Case; together with a Description of those contrived or improved by Myself.

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Under

Under the Denomination of *Preternatural Labours*, shall be included every Accident that Women are subject to, where an Operation by a Man-Midwife is necessary at any Time.

Difficult, or Preternatural Births proceed, *First*, From a *Mala Formatio Partium*. *Secondly*, From the Womb, which may be sometimes misplaced. *Thirdly*, From Weakness, and Loss of the Waters before Birth: And, *Fourthly*, From a wrong Situation of the Child, or, *Fifthly*, From its being disproportionately made.

First, When the *Os Pubis* and *Sacrum* are too near each other, it is evident, from a View of those Parts, *Tab. I.* and *Tab. II.* that the Head of the Child must stick there, *Tab. I. Fig. 1.* This does not happen, as some imagine, more frequently in little, than taller Women; for we often find little Women to have as capacious a *Pelvis* as the largest. If the Fault be in the *Os Sacrum*, by projecting too much forward, then it generally happens, that the Womb is also misplaced at the same Time, which renders the Birth still more difficult. This may be easily conceived, by inspecting *Tab. II. Fig. 1.* In this Case, if the Operator, by the Experience of a former Delivery, found the Passage through the Bones so narrow as to refuse

refuse the Exit of the Child (though not of an extraordinary Size) by the common Efforts of Nature, as mentioned in *Obs. IX.* § 51. or that the Child died, nor was destroyed by Instruments for the Preservation of the Mother's Life; and if the Operator be present when the Woman first falls into Labour, he ought to introduce his Hand, whenever the Membranes break, and then bring forth the Child by the Feet directly; for, though the Narrowness of the Passage be the same as in the foregoing Labour, and though the Child should be of the same Size and Shape as the former, yet, by drawing the Feet, the smaller End comes foremost, and the Operator can give considerable Assistance, by pulling by the Legs with one Hand, having at the same Time a Finger of the other in the Child's Mouth, § 56. and then turn the Chin so as to pass the Bones into the *Pelvis* in the most commodious Manner, § 51, 52. For there is a much greater Probability of bringing the Child forth this Way, than when the large End comes first, which can have no Assistance but from the Efforts of the Mother, without injuring either one or both of them. But if it should so happen, that the Operator is not sent for, till the Woman has been some Time in Labour (which is too often the Case) and that the Membranes are broke, and the Head fixed, and advanced

so far, that the Operator cannot force it back so as to turn the Child and bring it away by the Feet, which is the most melancholy Case in Midwifry; then it must be brought away by Force, or else both Mother and Child must perish. But this must be done after mature Deliberation; however, if we find the Patient's Strength begins to fail, and her Pains to decrease, her Pulse to intermit, and her Limbs to grow cold, then she must be delivered immediately, or they must both perish. The Manner of doing which I shall shew, when I come to speak of difficult Births occasioned by the Head of the Child being too large, § 99. to § 107. inclusive.

§ 72. When the Bones of the Hypogastrics and Pelvis form the Basen too large, there arise other Misfortunes; for then a *Prolapsus Uteri* is often occasioned, because here is no Counter-Force to the Pressure of the Child's Head against the Orifice of the Womb; whereby its Dilatation is to be accomplished; for the Ligaments, as I shewed in § 13, 14. cannot bear it up: By this Means, the Orifice of the Womb, instead of being dilated, is thrust forward, towards the external Orifice of the *Vagina*, by the Child's Head, and consequently the *Vagina* must be thrust out. An Instance of this Kind may be found in DEVENTER, part II. cap. iii. p. 32. and therefore, if we find the Pains

Pains very violent, and the Os Uteri not to be dilated thereby, we must be upon our Guard, lest a *Prolapsus* ensue. Women who have this Disposition, are most commonly troubled, during the Time of Gestation, with what they call a *Bearing-down*, which is a Sensation, as if the Womb was constantly coming out of the Body: This is a sufficient Warning to the Operator to be upon his Guard, to prevent the abovementioned Mischief; which is done, at the same Time that he assists the Mother, according to the Directions already given, § 46. by bearing up the Womb with his Fingers, in Proportion as the Mother's Throws force down the Child; and thrusting the Os *Tineæ* on each Side of the Head, at the same Time that the Pains force the Head forwards: This Method must be continued till the Orifice has passed over the Head; and if it should stop there, then the Operator should with one Hand pull the Head, and with the other thrust against the Os *Tineæ*; and if he cannot conveniently do that, he must call a second Person to draw the Head gently forth, while he keeps back the Womb with both his Hands; and as soon as the Child is born, the Operator must immediately introduce his Hand, both to replace the Womb, and to bring away the After-birth, in the Manner as before directed, § 52, 53, 54. For, in this relaxed State

State of the Womb and its Ligaments; it may be in Danger of being turned Inside out, if the After-birth should be pulled by the *Fanis* with any great Force. A Woman, in this Case, should lie upon the Bed from the very Beginning of her Labour. If the Operator be with the Patient, before the Membranes break, I would advise him immediately to turn the Child, as soon as the Waters come away, and to bring it away by the Feet with all the necessary Precautions here- in laid down; because, by this Means, the Woman will not be so long in Labour, and consequently will not be so much strained.

§ 73. If it should happen, that the Womb be entirely prolapsed, it must be immediately reduced, and placed in its natural Situation, by the Introduction of the Hand; the Patient must be kept in Bed as long as possible, and not rise even to perform the natural Evacuations. If the Patient's Habit of Body did not contribute to this Mischance, the Parts, by being properly replaced, and continued for some Time unmolested, will nearly recover their usual Tone, without any farther Application; but if the relaxed State of these Parts proceeds from a bad Constitution, it must be mended by a skilful Physician at the same Time using Pessaries made suitable to each Person's Shape or Make within *Tab. V. Fig. 1.*

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2, 3, 4. The Application, at the same Time, of Strengthening and astringent Plasters, to the Perforations of the oblique Muscles of the Belly, where the round Ligaments pass, is likewise made by some People, but is of little or no Use, except to amuse, 13, 14. and to comply with the Importunities of the Patients, who, thro' Prejudice, very often imagine nothing was done, were such insignificant Helps omitted, and that it proceeded from the Physician's Ignorance; for the Virtue of Astringents reach scarce farther than the *Cutis*, and, for that Reason, are never to be depended upon.

The Womb, when prolapsed, if not immediately reduced, will swell, inflame, and be in great Danger of mortifying; and the longer it remains out of the Body, the more difficult will be its Reduction, in Proportion to the Increase of the Swelling, which is caused by the Restriction of the external Orifice of the *Vagina*; wherefore, if the Reduction happens on this Account to be difficult, the Part must be fomented with the most emollient, mucilaginous Decoctions that can be contrived, and all possible Means must be used by the Hands, to restore it to its natural Situation; which if it cannot be accomplished, the miserable Patient must in all Probability die; though there are Histories of some, who have survived the Amputation of the prolapsed

Womb, but it is an Operation I shall never
recommend. *Slugs &c.*

§ 74. When the Womb only descends

§ 75. A *Prolapsus Vaginae* is, when that

Body appears, either wholly or in Part.

without the Tablet Revenue. of A total Pro-
 cessus Karim Cher itself without the Tablet

like a fleshy Ring, red, or bloody; and

swelled, but smoother than the Uterus. In

partial and complete, when only a

and thank for Dr. Buchschneider. Friend on San

owing to the Midwife who as the Wo

100 (in Royal Dutch, 1, 1/2, 2, red nobles & Surgery.

10. Some East of the Mississippi

... .. come,

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roma, or membranous Substance; we must therefore, observe, that a *Prolapsus Alti* never happens with an Inversion, but immediately after Labour; whereas the *Alti* may subside, and appear externally at any Time, either during, before, or after the Time of Gestation. Here the Part is also to be reduced, and the Woman confined to her Bed, as in the other Case.

§ 76. It may not be improper here to mention a remarkable Case, which I met with about seven Years ago, and may be said to be another Cause of difficult Labour, although the Child and Womb be properly placed,

OBSERVATION XLV.

About One o'Clock in the Morning, I was sent for to a poor Woman in this City (*York*), who had been some Time in Labour, and at her full Reckoning: She had been long subject to a *Prolapsus Alti*, which, when in Labour, descended still lower than usual: This I knew nothing of, till I went to touch her, to examine how the Child lay; and then I was greatly surprised to find as much of the Bowels out as would have filled my Hat-crown, which I apprehend had been owing to the Midwife, who, as the Woman lay upon her Back, must have mistook it for some Part of the Integuments of the

Fetus

Fetus of *Placenta*, and had pulled so much
 up before she perceived her Mistake. I
 found, by the intermitting Pulse of the Pa-
 tient, and from other bad Symptoms, that
 she must die in a very little Time; and
 therefore I went into another Room, and
 calling her Friends to me, acquainted them
 with my Sentiments, and that I thought
 it advisable not to attempt to deliver her,
 as we had Reason to think the Child
 was dead, and as the Mother must die
 very soon after Delivery, if not before;
 The Friends then all urged me very strongly
 (as, indeed, the Woman herself did after-
 wards) to deliver her; I then undertook to
 do it, and after putting up the Bowels, and
 keeping one Hand against the *Ans*, with
 the other I turned the Child, and brought it
 away by the Feet in a Moment, and then
 brought away all that was necessary; but
 as I foretold, the Woman did not live an
 Hour.

I mention this Account, as a Caution to
 all Women and young Practitioners, not to
 pull at any thing, unless they know they
 are right, for

OBSERVATION XVII.

A Lady not far from hence (Y^{rs}) is a
 remarkable Instance of a bad Piece of Cru-
 elty

elty and Ignorance in the Woman Midwife: I was sent for to her about the latter End of the great Frost in 1740, three Days after she was delivered; she complained of some Injury she had received from her Midwife, and that her Urine dropt from her constantly; upon Examination, I found Part of the *Vagina* torn away, and along with it a Piece of the Bladder almost as big as a Crown Piece; upon Enquiry, I found the Midwife had mistook the *Prolapsus Vaginae* for the Edge of the *Placenta*, and had with all her Force, tore it away.

§ 77. The Hemorrhoids or Piles are often another Hinderance in Labour; therefore I would advise every Woman, who is subject to that Complaint, to apply to a proper Person, to have the Swelling as much abated as possible, before the Time of Labour arrives; and, when in Labour, the Operator, as soon as the Membranes break, should endeavour to bring the Child away by the Feet immediately, unless he finds that the Labour will be very short, from the Rules already laid down; for the longer the Child's Head presses against or near the *Perinaeum*, and the more the Patient throats, the greater will be the Inflammation and Swelling, by which the Passage will be straitened, and thereby endanger the Tearing through the *Perinaeum* into the *Rectum*.

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but 78. I am now, in the *second Place*,
§ 71. to consider the Inconveniences, which
arise in Labour from a Male-Situation of the
Womb.

The Obliquity of the Womb has been
observed by several, as an Hindrance to an
easy Birth, by BARTHOLIN (2), by DE
GRAAF (a), PAS (b), AMAND (c), LA
MOYNE (d), MAURICEAU (e), and DE-
VENTER, who has drawn more just Conse-
quences from it, and considered how far the
Knowledge of this was capable of improv-
ing the Art of Deliveries, than any of his
Predecessors.

Whoever considers the Make and Shape
of the Bones of the Hypogastric and Pel-
vis (f), § 2. and the Fabric of the Womb (g),
§ 6, 7, 8, 9, 10, 11. will find, as DEVEN-
TER says (h), *Quò majorem gravidæ For-
tum gestant, eo altius Uterus in Ventrem
assurgat*; therefore, as here is nothing
strong enough to hold the Womb in the
Middle of the Abdomen, § 13, 14. as it
grows higher up, and increases in Weight, it
will sometimes press obliquely one Way,
and sometimes another, for the Ligaments
can be no Hindrance to its Obliquity, as
I shew before, § 11, 12, 13. For, as
DEVENTER says (i), *Uterus non est fixus*,
§ 14. and to examine the Cause of this,
(a) Pag. 285. (b) Pag. 19, 24. (c) Pag. 322.
(d) Obs. 18. Obs. 683. (e) § 2. and 3. of this.
(f) Ib. § 5. (g) Cap. 10. p. 449. (h) (i) § 9.
the

the Womb is oblong: *Tab. II. Fig. 3.* and 2. if its *Fundus* press against the *Sacrum*, the Head of the Child must press against the *Os Pubis*; on the other Hand, if the *Fundus* hangs over the *Os Pubis*, the Child's Head must be pressed against the *Os Sacrum*; and likewise, if the *Fundus* be on one Side, the Head of the Child must be pressed against the other, supposing it to be right in relation to the Womb itself. This will be more evident to any Person who will examine the Figure of the Womb of a pregnant Woman, as described by DEVENTER (*k*); and then he will find that the *Fundus Uteri* is a great Distance above the Ligaments, *Tab. IV.* therefore any Weight there would have a great Power, even if the Ligaments were of any Use to sustain the Womb; which I proved before, § 13, 14. they are not. We must also consider, that the more the Womb is extended, the higher it reaches, and therefore must be more liable to fall, on the one Side, or on the other, upon the Woman's turning on the one Side or the other in Bed, as any Person may perceive by applying the Hand to the Woman's *Abdomen*; but he would be still more convinced, was he to examine the *Os Tineæ*. DEVENTER had so many Opportunities of proving this

Obli.

Obliquity, that (1) he says, 'Multi adhuc sunt Medici, qui perversis his Uteri positionibus fidem non habent; sed si cadavera inspiciendo hanc rem examinaremus, fide non indigerent: proprius enim intueri oculis & manibus palpare possent; & qui convinci de hac re cupiunt, adfint mihi mulierem liberanti, & faciam, ut manus exterius corpori imposita perversam hanc posituram sentiant; ut non amplius essent increduli, & certi forent, me vera scripsisse.'

OULD, in his *Midwifery* (m), endeavours to bring a Proof that DEVENTER must be mistaken, and that the Womb cannot incline to the one Side or the other; but Admit, says he, there was a Possibility of the Womb's moving even three Inches any Way, its Effects on the Orifice must be very inconsiderable, as the Bottom is, at this Time, at least twelve Inches from the Orifice; so that if we suppose a Line twelve Inches long, having one End, which represents the Orifice, fixed to a Center, and the other End representing the Bottom, to describe three Inches of a Circle, at its full Extent from the Center, how insignificant must be the Alteration, at such an Inch Distance from the Center, would be in Proportion as much on the other side. (1) Cap. 3. part 2. pag. 28. (m) pag. 98. where

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where we may suppose the Child's Head to be?

The Doctor has not considered, that the impregnated Womb is in part spherical, and in part oval, or he must, from the very Figure of the Womb, naturally have concluded, that should its Bottom move but one Inch posteriorly, the Mouth or Orifice must necessarily be moved the same Distance anteriorly, & vice versa. The same is to be understood, should its *Fundus* incline either to the right or left Side of the Body, for to suppose its Adherence to the *Vagina* sufficient to make a fixed Point is idle, because every body, the least conversant with the Structure of the *Vagina*, and its loose Adhesion to the neighbouring Parts, knows it must yield either Way to the most insignificant Force, and consequently can never prevent the Womb's inclining to either Side of the *Pelvis*.

But let us even suppose, with *Quercetanus*, that the *Os Uteri* was fixed to a Center, yet, the farther the Child's Head passed the *Os Uteri*, the *Apex* of it would describe a larger Segment of a Circle, as the Womb to move; and therefore, if the *Fundus Uteri* did but incline three Inches on one Side, the Head of the Child, according to the Distance from the supposed Center, would be in Proportion as much on the other Side. Moreover, if the *Uterus* can, as it actually may,

may, incline more to one Side than another, while all the Waters are in it (as I can prove to a Demonstration it can) how much more may it incline, when the Waters are discharged almost at once, perhaps to two, three, or more Quarts, while there is such a Vacancy within the Abdominal Muscles, which cannot contract so quickly as the *Uterus* does? Any one, who will plead against the Possibility of this, need only introduce his Hand into the *Uterus* immediately after the bringing forth the Child, and he will easily remove the *Fundus Uteri* to any Side, without hurting the Patient. The most oblique *Uterus* I ever met with, to fall on either Side, was in the following Case.

OBSERVATION XVIII.

On October 30, 1750, I was sent for to a Person at *Carwood*, aged Forty-five, who had been above two Days in Labour of her sixth or seventh Child; the Waters came away at Three o'Clock in the Morning, and I arrived there about Ten in the Forenoon: I searched her as she lay on her Back, and found the right Side of the *Os Uteri* exactly in the Center of the *Pelvis*, and the left Side quite up above the Top of the *Pelvis*, or lower Part of the *Hypogastrium*; the Child's Head offered, but the Face presented obliquely

liquely to the left Side, and the *Fundus Uteri* was mostly on the right Side. As the Mouth of the Womb was sufficiently dilated, I immediately brought away the Child, but with no small Difficulty, as the Head was so large; I immediately introduced my Hand again, and brought out the After-birth and all Clots of Blood; during which Time, the Womb contracted so as to embrace my Hand very closely as I moved the *Fundus Uteri* from one Side to the other, altho' the whole Operation was over in less than a Minute after the Extraction of the Child. Though the *Fundus Uteri* inclined too much on the right Side, and though the Patient lay on the same Side when I delivered her, I chose to do it in that Position, because, as the Face of the Child then lay obliquely upwards, I could more easily reach the Feet, than if I had the Weight of the Child also to lay upon my Arm, as must have been the Case, had the Woman lain on her left Side. In searching for the Feet, I found there was but one Child, and therefore did not examine betwixt the Thighs of this (as I generally do) till I found the Child did not advance so easily as usual when the Feet come first. I therefore examined, and found the Umbilical Chord twisted round the Child's Body, was very strong, and went betwixt the

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Thighs;

Thighs; whereupon I immediately broke it, as the Child was ready for Birth.

§ 79. When the Operator, in the Beginning of Labour, perceives the *Os Uteri* higher up than usual, inasmuch that it is with Difficulty he can touch it, § 43, 44, 45, and that it presses against the last *Kartebra* of the Back, or the *Os Sacrum*, so that he can only touch one Side of it, and if he would introduce his Finger into it, is obliged to bend it more than common towards the *Os Pubis*; and when the Pains come, if they force the *Os Uteri* against the *Kartebra* or the *Os Sacrum*, and at the same Time the Waters are but small, he may then conclude, that the *Fundus Uteri* hangs too much over the *Os Pubis*, and that Part of the Belly is also too prominent; which sometimes it is, for some Weeks before Labour. If the Operator be not in Waiting at the Beginning of Labour, then, perhaps, he may find the *Os Tince* opened, and the Head of the Child pressing strongly against the *Os Sacrum*, and during the Pains, instead of advancing, is the more fixed; as it happened, in 1749, to the Wife of a Carpenter in this City (York), Bag not half full, Child which was about seven Years before: When I touched her, she was laid upon her Back, as I found her; I immediately placed some Pillows to be placed under the lower Part of her Back, and that

OBSER.

OBSERVATION XIX.

I was called to a Patient about Three o'Clock in the Morning, after she had been some Hours in Labour, having had the Membranes broke in the Beginning; I found upon Touching, that the *Os Frontis* of the Child was strongly thrust against the *Os Sacrum*, and that I could only touch one Side of the *Os Uteri*, viz. that next to the *Pubis*; upon introducing my Finger betwixt the *Os Uteri* and Back of the Child's Head, I found that the Head was bent backwards, and that its Neck lay upon the *Pubis*; and upon applying my other Hand outwardly upon the Patient's *Abdomen*, I found the greatest Relaxation (if I may so call it) of the Abdominal Muscles I had ever seen, inasmuch that the Womb, instead of being only prominent above the *Os Pubis*, actually hung over it like a Bag, and the Child seemed to lie with the Back of its Neck upon the *Pubis*; and at each of the Pains (which were very strong) the Head was pressed considerably backwards. The Woman told me, her Belly had been quite loose, like a Bag not half full, ever since she had her last Child, which was about seven Years before: When I touched her, she was laid upon her Back, as I found her; I immediately ordered some Pillows to be placed under the lower Part of her Back, and that

She should lie low with her Head; and after gently pressing the *Abdomen* upwards, I applied a broad Bandage round her lower Belly, and wrapped it as tight as the Patient could permit me; for during all the Pains, which were very strong, the Womb was so pressed against these Muscles, that they were so sore and tender, that she could not permit me either to press them with my Hand, or to gird them so tight as I could have wished; but yet the Womb was kept so upright, that I could introduce my Finger above the Child's Head, sideways; and putting it over the Chin, I pressed it downwards and from the *Sacrum*, by which the Head advanced considerably the very first Pain, and quite passed through the *Os Uteri*; but as the Womb was not yet right placed, the Back of the Shoulders was strongly pressed against the *Pubis*, and it was with the utmost Strength I could exert (which was not a little) that I was able to deliver her; and then I introduced my Hand, brought away the After-birth, placed the Womb right, and drew the Bandage around her much more tight. She recovered very well, and is yet able to attest the Truth of this Relation.

Had I been with this Patient when the Membranes broke, I would have had her placed on one Side, so that I could have introduced my Hand over the *Pubis* at that Instant,

Instant, and would have brought the Child away by the Feet; which would have been much easier for the Patient.

§ 80. If the *Fundus Uteri* lies too near the *Vertebrae* of the Back, then the *Os Uteri* will open against the *Pubis*; therefore the Operator, if he be in Waiting at the Beginning of Labour, should examine, and if he finds it difficult to reach all Sides of the *Os Tince*, or can only touch that Side next the *Os Sacrum*, he may be certain that the Womb is misplaced, as is herein mentioned, and if at that Time the Orifice be large enough for the Finger, and if the Head do not force too strongly against the *Pubis*, then he must introduce the Finger into the *Uterus*, and endeavour to press it towards the *Rectum*, while with the other Hand, the Patient being upon her Back, he presses externally above the *Os Pubis*; and if he finds the Head begin to descend, let some of the Assistants raise the Patient into an erect Posture. But it is seldom that a Man-Midwife is called in Time for this Operation, nor, indeed, before the Membranes break; after which, the Head is often fixed against the *Pubis*, so as not to be removed without Instruments, of which I shall speak hereafter. But if the Operator arrive before the Membranes break, or before the Child's Head be so fixed, that he can introduce his

Hand into the Womb, he should then turn the Child, and bring it by the Feet, as is described before, in § 56. For after the Membranes break, there is a great deal of Space within the Womb, more than the Child, &c. can fill up, and then the Addition of the Bulk of one Hand can give no additional Pain, and the Child may be turned with all the Ease imaginable; But the Case is otherwise when all the Waters have been come away for some Time; then the Womb is more contracted, and, from an (almost) oval Form, with a sufficient Force on each Side the Child, contracts and forms itself into an oblong Shape, closely enveloping the Child on all Sides, as in *Tab. X. Fig. 2. Tab. XI. Fig. 1. Tab. XIV. Fig. 2. Tab. XV.* in which Case it requires no small Force in the Operator to thrust his Hand betwixt the Child and Side of the Womb, and to turn the Child, thereby altering the then Shape of the Womb from an oblong to a more spherical Form, as the Child turns, by the mere Strength of his own Hand; and this too, when the Patient's Throws are strongly opposing the Operation, and sometimes with such Force, as will make the strongest Man sweat in the coldest Day; nay, the Womb frequently compresses his Hand so much, that the Operator cannot bend a Finger to take hold of the Feet,

§ 81. If the Bottom of the Womb incline more to the right or left Side, the *Os Uteri* will be turned to the opposite Side in the due Proportion; which the Operator by touching must know, if he be with the Patient at the Beginning of the Labour; and then he will touch only one Side of the *Os Uteri*, and that too higher than usual; and if the Womb be much inclined, will feel, on one Side, Part of the *Vagina* and Womb betwixt the Finger and the Head, while the Finger on the other Side can touch the Child's Head only. From this Situation, we find the *Os Uteri* cannot be extended as it ought, because it wants the regular Pressure of the Child's Head against it, § 43. 44. 45. and the Membranes are apt to break too soon; and having more Space on one Side than the other, an Arm is sometimes protruded out with the Waters, but the Head is apt to stick in the Passage.

In either of these Cases, the Woman should lie on one Side, during her Labour; that is to say, if the *Fundus Uteri* be too much on the right Side, then she should lie on her left; and so *vice versa*: And the Operator should then introduce a Finger into the *Os Uteri*, and endeavour to raise it towards the upper Side, while, with the under Hand, he gently thrusts the *Fundus Uteri* downwards from without. As this

Method will not always do, the most advisable Way will be, to follow the Directions, as above given in the other Cases, § 79, 80.

§ 82. I shall, in the next Place, shew the Danger which arises from the indirect or preternatural Situation of the Child in the Womb, and shall endeavour to point out their Differences, and the Method of removing each particular Calamity.

These Situations may be said to be *Three-fold*: *First*, When the Feet come foremost, when one Foot comes alone, when one or both Knees present. *Secondly*, When the Body of the Child lies transverse, either with the Belly, Back, or Side presenting to the Orifice, with or without many other aggravating Circumstances: And, *Thirdly*, When the Head comes in a Position different from that which has already been proved to be the natural one; and that, with the Addition of the *Funis* coming with the Head, or when one or both Hands come with it, &c.

§ 83. *First*, When the Feet come foremost, the Situation next to the perfect natural one, is the best and most expeditious, with a little proper Care and Management, § 56. We must take Care that both Feet come together, and that they belong to the same Child, in order thereto, it must be observed, that, in this Case, the Waters

ters do not gather in so round and uniform a Bag, as when the Head presents. *W 44* the Operator must, therefore, be more strict in his Searching, whereby he may frequently feel the Feet through the Substance of the Membranes before they are broke; which he must be very watchful of, because, when the Orifice is sufficiently dilated to give Passage to one Foot, it is most commonly thrust forth by the Mother's Throws, if not diligently attended to by the Operator, *Tab. XI. Fig. 1.* to avoid which, he must have his Finger at the Orifice during the whole Time of every Pain; and when he perceives one Foot beginning to approach, he must introduce his Hand into the Womb, to find out the other; if it be near the Orifice, of equal Length with it, and that the two great Toes are contiguous to each other, he may then conjecture that they belong to the same Body. This with the necessary Precautions already laid down, in § 56. will be sufficient, and he may bring forth the Child, as represented in *Tab. X. Fig. 2.*

§ 84. When the single Foot is suffered to come forward (which is often the Case, if the Man-Midwife be not there in Waiting) then the Difficulty is increased by every Pain of the Mother; for in Proportion as it pushes one Foot forwards, it puts the other so much out of the Way; and what

what adds to the Misfortune, is, that as the Child advances, the Womb contracts itself on it; § 55. which not only impedes the Leg from being put back, *Tab. XI. Fig. 1.* but also requires greater Strength in the Operator to force his Hand through the Orifice, to find out the other Foot. However, if it be not advanced very far, it may be easily put back; and the Operator may slide his Hand along this Leg and Thigh till he comes to the Buttocks, and by bringing it back again by the adjacent Thigh, he will avoid all Mistakes. If the first Leg should be far advanced, it must be thrust back, wholly or in Part, to make Way for the Hand to find out the other, as above; which may be attended with no small Difficulty, when the Waters have been long evacuated, and if the Womb be firm and rigid, and be strongly contracted about the Child; nay, in such Cases it cannot be put back without great Danger of bursting the Womb.

It sometimes happens, when one Foot is at the Orifice, that the other lies along the Child's Body, *Tab. XI. Fig. 1.* In this Case also the Difficulty is increased by how much the Foot is suffered to come forth, as the other, at best, is not easily brought to its Place; the Method of doing which is as follows: Introduce the Hand into the Womb along the misplaced Thigh, till it reach the Leg, which bring parallel (if possible with Safety).

Safety) to the Thigh, by bending the Knee; this brings the Foot near the Orifice, which must be brought forwards as far as the other; after which, the Operation is performed as before directed, § 56. 83.

Many Persons give themselves no more Trouble than to search for one Leg, and pull the Child out by that, the other coming parallel to the Body, as in *Tab. XI. Fig. 1.* but this I should recommend to avoid doing as much as possible, although *GIRARDI*, in his *Observations in Midwifry*, out of Two-hundred and twenty-five Persons, delivered Forty-seven this Way; which must inevitably overstretch or tear the Parts of some Patients: But if the Womb has contracted close to the Child, as represented in *Tab. XI. Fig. 1.* and if the other Foot cannot be got, then the Operator must draw by one Foot, always taking Care to pull that Foot a little towards the other (which he may know how to do, by the great Toe) lest he break off the upper Part of the Thigh-Bone.

§ 85. When the Child is large, in a more than ordinary erect Position, and the Quantity of Water contained in the Membranes is but small, the first Efforts of the Labouring Patient not being sufficient to turn it in the Womb, § 40, the Knobs sometimes fix themselves at the Orifice, as in *Tab. XI. Fig. 2.* and at first Touching, when

when the Orifice begins to dilate, they greatly resemble the Head; but as the Orifice dilates, the Finger can easily pass round, so as to satisfy the Operator what Part presents. When the Orifice is sufficiently dilated, whether by Nature or the Operator, he must introduce a Finger between the Thigh and Leg of the Child; and, by raising the Thigh towards the Child's Belly, he may extend the Leg; this being done, the other must be treated in the same Manner, and then proceed as before directed, § 56, 83.

TAB. X. and XI. Explained.

TAB. X. Fig. 1. represents the Front-View of a Child, as in *Tab. IX. Fig. 2.*

Fig. 2. represents a Child that offers its Feet for the Birth, which the Operator takes hold of, to bring the Child forth. *a*, shews how far the Womb was extended before the Membranes broke to let out the Waters. *b*, shews how the *Uterus* contracts, and closely envelopes the Child when the Waters are run out. This is a necessary Observation, which I have never seen in any Copper-Plate before.

TAB. XI. Fig. 1. shews a Child presenting with only one Foot, the other being parallel to its Body; in this *Figure* also is seen,



fig. 1.



fig. 2.

fig. 1.



fig. 2

seen, how the *Uterus* contracts, when the Waters have been evacuated.

Fig. 2. represents a Child offering with its Knees for the Birth, the Membranes being still whole.

§ 86. I shall now proceed to treat of those Labours, where the Body is transverse in the Womb, presenting various Parts of the Trunk to the *Os Uteri*.

When the Head comes right, we soon perceive its Influence by the Touch, in the Manner already set forth, § 43, 44, 45. but if the Posture be wrong, especially transverse, the Operator will perceive very little Effect from the Mother's Pains, and scarce any when the *Sternum* presents.

The Child lying cross the Womb, may present any Part of the Spine, from the Neck to the *Sacrum*, as in *Tab. XII. Fig. 2.* and the higher the Buttocks are, the more difficult the Operation is, as the Feet are so much the more distant from the Operator. When the Shoulders present, as in *Tab. XII. Fig. 1.* it is easily distinguished from the Head by the Signs abovementioned, and from the Flatness of the Form, and Inequality of the Bones: In the first of these Cases, *Tab. XII. Fig. 2.* the Hand must be slid over the Sides of the Belly to take hold of the farther Foot, or Knee, and turn it with the Belly to the *Os Uteri*, and then it may be

be brought away by the Feet with Ease. But in the latter Case, as in *Tab. XII. Fig. 1.* the Operator must slide his Hand over the Breast of the Child, and by putting a Finger betwixt the Leg and Thigh, may turn the Child so as the other Foot may be reached for, and then bring the Child away, as before is mentioned, § 56, 83, 84, 85, 86.

Some advise, in the Situation, *Tab. XII. Fig. 2.* to slide the Hand along the Infant's Back, till the Operator can bend his Fingers under the *Os Coccygis* of the Child, and then to thrust up towards the Head, in order thereby to bring the Feet the more into his Reach; but I prefer the other Way, as being more safe for the Child; for whoever considers the tender State of the Bones of a new-born Infant, and the Force necessary to turn the Child in the Womb, especially when the Membranes have been any Time broke, and when the Womb is contracted by the Pains, will soon perceive, that such an Impression against the *Os Coccygis* may be attended with dangerous Consequences; for suppose the Infant to be a Girl, and that the *Os Coccygis* should by this Means be bent inwards, which might easily be done: what a Scene of Misery might thence ensue, although not till many Years after, if ever she became pregnant? If the Fingers could press against the Buttocks, so as to move the

the Child, without either touching the *O: Coccygis*, or Parts of Generation, then that Method may be pursued; but the other is much easier to be done, because the Womb presses more against the two Ends of the Child (as the Head and Buttocks may, in this Case, be called) than against the Side.

But it may so happen, if the Waters have been long evacuated, and if the Womb be very rigid, and strongly press all Sides of the Child, that it cannot be turned without the Hazard of bursting the *Uterus*; the Consequences of which are very obvious: For whoever will consider, when any Part of the Child is near the *O: Uteri*, and the Buttocks are at the *Fundus*, and that the Length of this contracted *Uterus* is above double its Diameter, will soon see the Danger of using too great Force in turning the Child; because, if, in this Situation, the *Uterus* will scarce yield to permit the Operator's Hand quite flat and open, betwixt it and the Child, how will it give Way for at least six Inches, which it must do, if the Child be turned? Whenever, therefore, such a Case happens, the best Way is to extract the Child by the Head, either with the Forceps, or with my Extractor, as there may be Occasion. For as the Womb will frequently burst, if the Pains are very great, and the Child remain fixed; § 43. as LA MOTTE remarks, in *Obs.* 317. 318. we may reasonably conclude, that too great

great Force is not to be exerted in trying to turn the Child, if closely embraced by the contracted *Uterus*.

§ 87. When the Middle of the Back presents, the Operator must introduce his Hand a-cross the Child over its Belly, and by taking hold of the farther Knee, may easily turn the Child half round (as it were upon an Axis, the End of which may be said to go out at the Head and *Anus*) and then he has both Legs ready to take hold of and bring the Child away, as directed, § 75, 86. I always advise to reach the farther Knee, to avoid either dislocating or breaking the *Os Femoris*, which might happen perchance to the nearer Leg; but even in some Cases, the nearer Leg may be taken hold of with Safety, because the Force required, as I observed before, is not so great as is requisite to turn the Child Lengthways.

T A B. XII. *Explained.*

Fig. 1. shews the Position of a Child presenting the Back of its Shoulder for the Birth.

Fig. 2. shews a Child lying a-cross the Womb, with its Back to the *Os Uteri*.

§ 88. When the *Os Sacrum* presents, the Child commonly comes with the Buttocks foremost, as in *Tab. XIII. Fig. 1.* and then the

fig. 1.



fig. 2.



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the more it is suffered to advance, the more dangerous and difficult will be the Labour: Therefore, as soon as the Operator perceives, by the Softness and Fleshiness of the Parts, what Part presents, he must immediately thrust up against the Buttocks with all his Strength, but without committing Violence to the Child's *Os Coccygis*, or its Parts of Generation, which are often in this Case swelled; and as he thrusts up, he must endeavour to turn the Child with its Belly towards the *Os Uteri*; and then search for the Feet, which sometimes lie bent with the Calves of the Legs close to the Thighs (as in the right Foot of *Fig. 1. Tab. XIII.*) and then they are near the Orifice of the Womb, and may be easily drawn forward, betwixt two Fingers, while the Buttocks are thrust up by the Thumb of the Operator's left Hand: Which is a better Way than, as some advise, by pulling with one Hand at the Feet, while with the other Hand they thrust against the Buttocks; for they do not consider the Injury done to the poor Woman, if two Hands be in the *Vagina* at the same Time. It would be much safer (than with both Hands in the *Vagina*) to slip a Fillet over each Foot, and then pull at that, while with one Hand only the Operator thrusts at the Buttocks.

I have met with several of these Cases, and never had Occasion to attempt any but
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the first Method, which, I am convinced, is sufficient (where the Children are proportionably made) if the Operator has any Strength.

OBSERVATION XX.

A remarkable Case of this Kind I met with, in a Lady of Distinction in this City (*York*) above seven Years ago: The Membranes had broke about an Hour or two before I was sent for; and the Midwife at last perceiving that the Child was situated in the same Manner as one which the same Lady had some Time before: She acquainted the Gentleman her Husband therewith, and also her Sister, who was at the Labour; both of whom were under great Concern, because the poor Lady was four Hours under the Man-Midwife's Hands in the former Labour, when the Child was cut to Pieces; which made them so timorous, that they scarce knew how to acquaint her with her Condition; but, as no Time was to be lost, they desired her to consent, that better Advice might be had; to which she agreed; and as the other Man-Midwife (who was before concerned, at that Time esteemed the best in the Place) was dead, I was called in: When I arrived there, I found the Gentleman below Stairs under the most dreadful Apprehensions, as the Midwife had told him

him the Situation was the same as before. When I went up Stairs, the Husband desired, before I attempted to deliver his Wife, that he might be sent for into the Room; accordingly, when I was ready, he came and took Leave of his Lady, wishing her a happy Delivery; but shewed so much Concern, that, had not the Lady been very courageous, it was enough to have sunk her Spirits; but she bravely desired him to be chearful, and she did not doubt doing well: He retired, and that Moment I began to deliver her in the Manner above described; the Whole of which Time, and the Bringing away the *Placenta*, &c. did not last one Minute, and both the Lady and Son are now alive and well. The Lady's Sister followed the Gentleman so quickly down Stairs with the good News, that he had scarce got into the Room before his Grief was turned into Joy; and he came quickly into the Chamber again, to be convinced by seeing the Child. But to return:—

It may happen, that both the Legs and Thighs may be extended parallel to the Child's Body; in this Case, the common Directions are, To take each Leg separately, and bend the Knee, so as to bring them into the Posture just now mentioned, § 84. in order to bring forth the Child after the

same Manner. This Method, I own, I cannot agree to, because of the great Difficulty in bringing it about; which, if the Womb be close contracted, is scarce possible; for in this Case, the Operator must not only extend the Womb sideways, with the additional Bulk of his own Hand, but he must also extend it yet more, by the Length of a Leg from the Thigh to the Heel, in the upper Part of the Womb; and also in the lower Part, by the extending of the Thigh; and this too, when the Pains are so very strong, that the Womb almost disables the Hand. I should, therefore, rather advise to attempt to thrust up the Buttocks, and, by pressing against the *Os Sacrum*, endeavour to bring the Child a-cross, with the Back against the Orifice of the Womb, as in *Tab. XII. Fig. 2.* and proceed as in that Case is directed, § 87, 88, 89. For by this Means, there is much less Pain to the Mother; less Force required from the Operator; less Danger of maiming the Child, and more Room in the Womb to turn it; all which, I hope, will be sufficient Reasons for my dissenting from some of my Predecessors, in this Case.

§ 89. When the Buttocks come foremost, it sometimes happens (though very rarely) that it may be brought forth in this Posture, if the Child chance to be very small, and the Passage large: But yet this is very accidental;

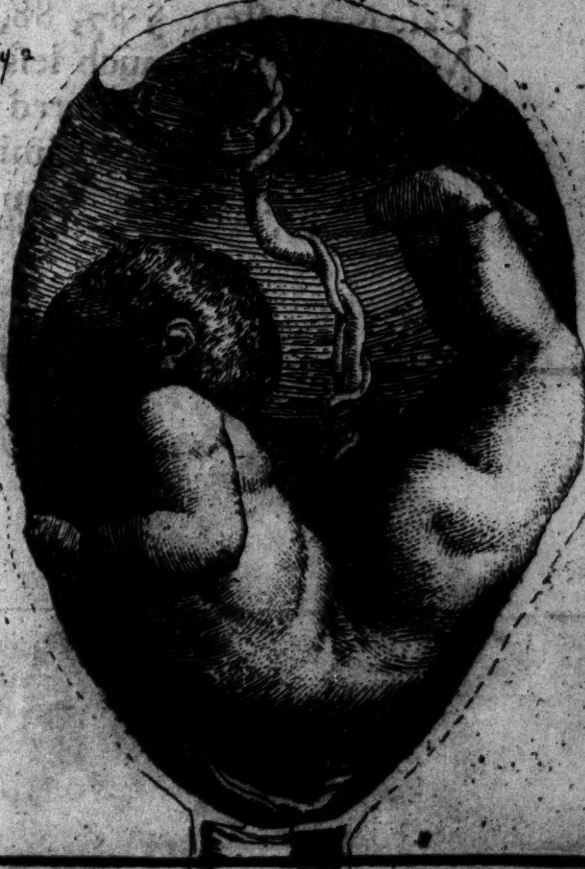
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Tab 13.

fig 1



fig 2



dental; for, though we may discover the Passage to be large, yet we cannot so easily judge of the Child's Bulk, and therefore we should attempt to bring it forth by the Feet, as directed in § 88. However, if the Labour should be so far advanced, that the Child cannot be put back, we must endeavour to forward its Expulsion as much as possible, by dilating the circumjacent Parts of the Mother; and as soon as Opportunity serves, a Finger must be introduced at each Side, between the Child's Belly and Thighs, at the Groin, whereby it may be brought forward, if of a moderate Size; if, on the contrary, it cannot be extracted in this Manner, there must be two Instruments applied, in the Place of Fingers, as shall be hereafter directed. When these Parts present, the *Meconium* is frequently forced out by the Pressure of the Womb.

T A B. XIII. *Explained.*

Fig. 1. represents a Child with its Buttocks to the Os Uteri.

Fig. 2. shews an imaginary Position of a Child, as mentioned by some Authers; but is proved to be only so, in the Sequel.

§ 90. When the Breast or Belly presents to the Orifice, the Danger, both to Mother and Child, is greater than where the Back

presented: The Difference, in respect to the Child, is very considerable; for when the Back presents, the Body is bent in a Direction which the *Vertebrae* are capable of; but when the Breast and Belly are next the Orifice, the *Vertebrae* are bent backwards, so that by the Mother's Throws the *Vertebrae* are in Danger of being broken, or dislocated. As, in this Situation, the Child presses least against the *Os Tineæ*, because that Part cannot become convex, that Orifice is the least dilated by the Pains; and therefore the Operator must introduce one Finger into the *Vagina*, and endeavour to make Room for another, and so on, till he find what Part offers; if it be the *Sternum*, it will be known by the Ribs, *Cartilago Eniformis*, &c. and then the Orifice must be so dilated as to give Admission to the Hand into the Womb, to find out the Feet, and thereby bring out the Child, as follows: One Hand must be introduced and slid along the Belly; then the Operator must place two Fingers under the *Os Pubis*, so as not to hurt the Child's Parts of Generation, and then turn the Child, so as to have its Legs as near the Orifice of the Womb as possible. Then he must place a Thumb as near the Articulation of the Thigh to the Body as he can; and, with his Fingers placed beyond the Thigh, endeavour to bring each Thigh close to the Belly; which done,

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done, he may easily get the Feet, and proceed as before.

This is the Method directed, supposing the Child to be in the Position as in *Tab. XIII. Fig. 2.* which, I must beg Leave to say, I think impossible to happen. For, let any one consider the Length of a Child from the Head to the Hips or Buttocks, and that then it nearly reaches the whole Length of the Womb; let him also consider the Force requisite to distend the Womb to a greater Length (and still a greater Force is required to distend it cross-wise) and then let him see what Force the Child can exert to lengthen the Womb; as much, at least, as the Length of its Thigh from behind to the *Patella*, which is several Inches; and I am certain he must be of my Opinion, and must think that Posture to have been entirely imaginary, or mistook for the next Position, as in *Tab. XIV. Fig. 1.* because here the Belly presents, and the Knees are pressed so far backwards and sideways, that it is with Difficulty they can be found; which I fancy may have drawn some into the mistaken Notion of the former Posture.

§ 91. When the Belly presents, the Operation is less difficult, because the Orifice may be more dilated, and the Feet are somewhat nearer Reach: The greater Danger is from the *Funis* coming forth, by which the Circulation may chance to be

stop; wherefore the Operation must be performed as above, § 90. as soon as may be. This Posture I have frequently met with; and once was called in, where the Person concerned imagined the Situation was as in *Tab. XIII. Fig. 2.* when it really was as is represented in *Tab. XIV. Fig. 1.*

§ 92. I come now, in the *third Place*, to shew what must be done, when the Head comes in a Position different from what has been shewn to be natural.

The Head may come with the Face or Chin towards the *Os Uteri*, having the Back of the Head lying backwards, as in *Tab. XIV. Fig. 2.* It may also come with the Side or *Os Temporis* presenting, having the opposite Side lying on or near the Shoulder; or it may come with the Back of the Head foremost, or with the Face to the *Os Pubis*, as in *Tab. XIV. Fig. 2.* The *Funis* is liable to come down with the Head in any of these Postures, as is also one or both Hands. Therefore, if the Operator finds, when the Membranes break, that the Head presents in any of the above Directions, and that the *Os Uteri* is sufficiently dilated, he must introduce his Hand into the Womb, along the Child's Breast, to bring it forth by the Feet; and more especially if one or both Hands, or the *Funis* comes with the Head: For, as there is no Danger, either to Mother or

Child,

Fig. 1.



Fig. 2.



Child, by bringing it away by the Feet, it is better to do it immediately, than to attempt to reduce the Head into its proper Place, § 86. after which, the Patient must undergo the Fatigue and Misery of Labour, at a Time when her Spirits are almost exhausted. Whenever Instruments are used in this Case, the Manner is mentioned in § 102.

T A B. XIV. *Explained.*

Fig. 1. shews a Child presenting with its Belly, whose Posture has been, by several Persons, mistook for that mentioned in *Tab. XIII. Fig. 2.*

Fig. 2. represents a Child, whose Chin sticks upon the *Os Pubis*, Part of the Navel-string being in the *Vagina*, and the Waters being out, the *Uterus* is contracted close to the Child.

§ 93. But, should it so happen, that the Child's Head should advance beyond the *Os Uteri* into the Passage, as in *Tab. XV. Fig. 1.* in any of these Directions, or have the *Funis* or *Anus* engaged with it, then both the Danger and Difficulty will be much increased; because the Child cannot be put back again, so as to get hold of the Feet, and perhaps it may be very difficult to bring it forwards. When both Hands come with
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the Head, it seldom comes so far as to hinder its being put back to find the Feet; but when one Hand only comes with the Head, it may advance so far as not to be put back again; yet sometimes, when the Head is not over-big, it comes very well either Way, if the Woman be but large in Proportion: But in either Case, if the Patient grows weak and languid, Instruments must be made use of, in the Manner hereafter mentioned, from § 100. to 107. inclusive. Whenever the Child presents this Way, and the *Meconium* comes out, it is certain that the Child has breathed, and therefore, very likely, will be born dead.

§ 94. If the *Funis* comes with the Head, the Danger is double: *First*, From obstructing the Circulation, and thereby killing the Child; and, *Secondly*, from a Flooding by the Humours not being sucked in by the *Placenta*, which may cause a Separation before the proper Time; wherefore it must be put back beyond the Head, if possible; if not, it must be brought to the Side of the Head, near the Temples, and by the Flatness of that Part, and the Elliptical Form of the Bones, it may in some Measure avoid the Compression; and if the Child be alive, the Pulse may be felt in the Chord.

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The Labour may be very difficult and dangerous, when the Head is advanced in any of the abovementioned Directions; and neither Hand nor Feet comes with it; and if it cannot be reduced, the Operator must have Recourse to Instruments: If the Face presents, the Top of the Head being intercepted by the Os Pubis, *Tab. XIV. Fig. 2.* the Sternum is pushed forwards by the Mother's Throws; and then the Child must be brought by the Feet.

§ 95. Sometimes the Child presents one or both Hands, without any other Part coming with them; and sometimes both Hands and Feet together.

When one Hand comes by itself, it is esteemed one of the most difficult Cases in Midwifry for the Operator; as some think it, because the Head, being out of its natural Direction, cannot press to dilate the Os Uteri, and the small Dilatation that is made, is taken up by the Hand, which cannot be put back (if far advanced) so as to give Admission to the Operator's Hand, to bring forth the Child by the Feet, which is the only Method in this Exigence. And again, the Feet are at a greater Distance from the Orifice, in this Situation, than in any other, as may be seen in *Tab. XV. Fig. 2.* and that too, at a Time when the Waters are evacuated; and perhaps the Womb is also contracted.

§ 96. If the Hand be not far advanced, it must be instantly put back into the Womb; and if there be Occasion, the Orifice must be dilated with the Fingers, as before directed, and the Hand introduced along the Child's Belly, to find out the Feet, and thereby bring it forth, with all the necessary Precautions.

I must observe, that, next to the Head presenting, the Arm is more liable to offer itself, than any other Part; because, if the Child's Head be any way misplaced, or stick on one Side, the Hand can easily slip, or, by the Pains, be forced into the Passage, and, the farther it is advanced, the more troublesome will be the Labour.

T A B. XV. *Explained.*

Fig. 1. represents a Child, whose Head has passed the *Os Uteri*, which is contracted about the Child's Neck, as the Womb is about the Body, the Waters being evacuated.

Fig. 2. represents a Child, whose Hand and Arm is in the *Vagina*, the Womb being contracted about the Child.

§ 97. When the Hands and Feet come together, there is less Difficulty in performing the Operation, than in the preceding; because the Feet are easily found, and the

fig. 1.



fig. 2.



Os Uteri is more dilated by their Pressure; all the Operator has to do, is, to take the Feet, which he knows by the great Toes and Heels, with the usual Precautions, and draw the Child forth thereby; there is no great Occasion to concern himself about the Hands, because, as the Feet advance out of, the Hands will retire into, the Womb.

§ 98. When the preternatural Situations aforementioned are attended with such bad Consequences, how much must every Circumstance be aggravated, when there are two or more Children at once in the Womb? *Tab. XVI. Fig. 1.* says Dr. OULD. But I must own, I differ from him in this, as well as in some other Things; because, in general, when there are more than one Child, they are commonly less than usual, and, of Course, more easily brought out; and I have rarely had less Trouble, than where there were Twins. The Waters, I own, are not in so great a Quantity; but yet, if the Operator be there in Time, there will be no great Difficulty, with the Precautions above given, to bring forth one; and that gives Room sufficient for turning the other as the Operator chuses, the greatest Care being to distinguish between the Hands and Feet, by the Characteristics already laid down, and to bring them away by the Feet. It frequently happens, that one Child will die in the Womb

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some Time before Labour, while the other shall yet be alive.

§ 99. The Bringing forth of a dead Child comes next under our Consideration; therefore, lest we should use Instruments before the Mother's Complaints require, and thereby destroy the Child, we should be very attentive to the proper Symptoms. The Signs generally are, When the Mother has received any Hurt, whereby the Child ceased to move, for some Time before the Labour begun; when there oozes from the Womb a fetid, corrupt Humour; but this alone is no certain Proof; for sometimes the fetid Smell will proceed from grumous Blood corrupted in the Womb, or where one of the Twins has been some Time dead: When the Mother, at the same Time that she feels no Motion, perceives a great Weight at the Bottom of her Belly, which Weight falls to whatever Side she lies on; when her Colour becomes livid, and her Belly feels cold, and sometimes flatter, and the Breasts have become flaccid; and at the Time of Labour, by not perceiving any Pulsation in the Fontanel of the Child, or in the *Funis*; or if the *Meconium* appears, when the Child's Head or Arm presents, § 93. All, or most of these shew the Child is dead.

If it be known, by these Signs, that the Child is dead at the Beginning of Labour, the

the Operator should immediately, upon the Breaking of the Membranes, bring the Child away by the Feet, in the Manner herein directed: But if the Head should be too far advanced, then the properest Method will be, to bring it away with Instruments, as in that Case is hereafter mentioned. But if it should be misplaced any way within the Womb, then the Directions already given will be sufficient. I must also observe, that where the Child has been some Time dead, the Membranes are corrupt and tender, and let go the Waters too soon; and the lubricating *Mucus* is not secreted in sufficient Abundance, to relax the Parts: Hence the Labour is always more difficult, *cæteris paribus*, than when the Child is alive; and the Mother is sometimes feverish, from the putrid Humours, whence she is in great Danger of dying in a few Days.

If the Waters break forth, where there is a dead Child, the Child will corrupt more in two or three Days, than in a Month, if they had continued in the Bag.

§ 100. I shall, in the next Place, proceed to illustrate that Part of Midwifery, where the Mother's Life is not to be saved, but by bringing away the Child, either wholly or in part, by the Help of Instruments. This I rather chuse to do in a Place by itself, to avoid Confusion of Dates.

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The principal Ends in the Practice of Midwifery are, *First*, To deliver the Woman with the greatest Ease and Safety; And, *Secondly*, To preserve the Life and Limbs of the Infant. Hence it is that such Variety of Instruments have been invented, to be used according to the particular Case. But the greatest Difficulty is, to judge the exact Time when this is to be done; for, on the one Hand, a Moment's Time will sometimes produce most surprising Alterations in this Respect; and yet, on the other Hand, where we are certain the Destruction of the Child is necessary, the sooner the Operation is performed the better, or else the Mother's Life may be endangered also; hence we see, there are some Cases, where the Mother may be saved by the Child's dying, perhaps only a few Hours sooner than otherwise it would have done; as in violent Floodings, &c.

The chief Directions to be depended upon, are, When we find the Patient's Strength to decay; which may be known from the Time she has been in Labour; by the Absence of her Pains; a Coldness in the Limbs; a depressed, intermitting Pulse, and the like, § 71. and whenever there is a violent Flooding. Then the Child must be brought away at all Events, by such Instruments as are the most convenient for the Purpose. Therefore I shall mention the Instru-

Instruments chiefly made use of; and the Manner of using them; and then shall shew some Improvements that I have made in this Branch, which I have laid before the ROYAL SOCIETY, and before the Medical Society of Edinburgh, and some of the most Eminent of their Profession in Dublin, which have been greatly approved of, and highly applauded.

§ 101. It is acknowledged, on all Hands, that some of the most melancholy Cases in Midwifery, are, *First*, When the Child, though coming in a natural Direction, cannot be brought forth, either on Account of the extraordinary Size of its Head, or of any other Parts being too large in Proportion.

Secondly, When the Form of the Bones of the Pelvis is bad; and,

Thirdly, When the Child's Head is separated from its Body, and left alone in the Uterus.

In the *first* of these Cases, one of the first and chief Instruments heretofore made use of, is the Crochet, *Tab. XVI. Fig. 2.*

This is really a very bad Instrument for the Mother, as will appear to any Person, who will consider, that in all natural Births (and Nature is our best Guide) the *Lapal or Summit of the Head*, *Tab. Fig. 1. Let. a, § 50, § 10* near where the *Lambdoid and Sagittal Sutures meet*, *Tab. I. Fig. 3*

always presents itself, which going sloping posteriorly and anteriorly to the *Occiput* and *Os Frontis*, when pressed, acts like a Wedge, as the Mother's Throws increase, which, by pressing forwards, make the Shape of the Head longer, and consequently smaller, § 48. for which Purpose, Nature has formed the *Cranium* to yield, or be easily moulded. Now it is self-evident, that whatever either adds to the Bulk of the Child's Head (which is already supposed too large, notwithstanding its pliable Texture) or turns the *Apex* into any other Direction than to the Center of the Passages, must injure the Mother by over-stretching the Parts, and also too frequently by tearing the *Perineum*. W. 8019

The very Manner of fixing and using the Crochet is greatly prejudicial to the Mother, exclusive of its Bulk; for the Operator must have his Hand, or some Fingers, within her *Vagina* or Womb, against one Side of the Child's Head, whilst the Crochet is forced into it, and draws it out, by which the poor Woman must suffer great Pain and Distortion; but if the Operator, after fixing the Crochet, should only pull by it without having either a Hand or Fingers within the *Vagina* (which ought not to be omitted) he will direct that Part of the Head, in which the Instrument is fixed, mostly into the Center of the Passages, and of Consequence will turn the *Apex* to one Side or other, by which

which the Mother must suffer greatly. Hence we see, that Using this Instrument is attended with these Inconveniences.

First, As it adds to the Bulk of the Child's Head.

Secondly, As, in using it, the Bulk is increased by the Operator's Hand.

Thirdly, As it directs the *Apex* in a wrong Line, whenever it is not fixed in that Part of the Head; which is the most difficult Thing to do, if we consider the Fabric of the Skull.

Fourthly and lastly, There is some Danger of wounding the Mother in fixing the Crochet; and, when once fixed, of its slipping; which frequently happens to the most careful Operator, when great Force is required to pull at it; or when the Head is in Part corrupted.

The third Inconvenience herein mentioned may be avoided by making use of two Crochets made like a Pair of Forceps; or by one Side of the Forceps, with a Crochet made to fix to it, *Tab. XVI. Fig. 3, & 4.* by which Means, the *Apex* may be kept in the Center of the Passages. But then both these Ways add considerably to the Bulk of the Child's Head. And although Women are very differently made, and Children also vary in the Bulk of the Head, and Thickness of the Neck; yet these Instruments, being of a particular Size, cannot be made

to yield, and must therefore be so large, in respect to the Make of some Women, that they must endanger the Teasing of the Perineum; many Complaints of which Kind have been too often made to me, where Operators have been too fixed with these Instruments, and I will endeavour to illustrate my Sentiments in two Instances, by which the Instrument-makers will best know how they should make them to do the least Injury.

It may be remembered, that I gave the Dimensions of the Pelvis of a fixable, well-proportioned Woman, § 2. which I had found, at a Medium, to be about a general Size of Women, and therefore set it down as a Standard; I have likewise been at the same Trouble in measuring the different Dimensions of the various Parts of the Heads of a great many Children, and have taken one of those at the nearest to the general Size.

T. A. B. I. Fig. 1. and 2.

Inches.

Of the Woman, from the Inside of one Ilium to the other is 5 1/2
From the Os Sacrum to the Inside of the Pubis, at the Top, is 4 1/2
Betwixt the inner or sharp Processes of each Ischium is 4 1/2
And betwixt the lower Crista, or Tuber of each Ischium is 4 1/2
Hence

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Hence it is evident, that the Forceps or double Crochet, for this Woman, when used and fixed to the Child, ought not to be (at most) above three Inches and a half, measuring from Outside to Outside of each Bow, *Tab. XVI. Fig. 3. Lett. b*, because the Thickness of the Vagina, &c. will take up the other Space betwixt the Instrument and the Bones.

Tab. I. Fig. 3, and 4.

The Head of the Child, with the Integuments, measured as follows, viz.

From the Front to the Back of the Head	4 $\frac{1}{2}$ Inches.
From the Chin to the Back of the Head	5 $\frac{1}{2}$
The Depth of the Head, from the Top, to just below the Ears	3 $\frac{1}{2}$
From Side to Side of the Back-part of the Head	3 $\frac{1}{2}$
From Side to Side of the Temples	3
Diameter of the Neck	2 $\frac{1}{2}$

The Forceps or double Crochet, for this Child, ought to be no nearer, at that End which is to be fixed near the Neck, *Tab. XVI. Fig. 3. Lett. a*, than two Inches; but yet they make them almost to meet; which must injure both Mother and Child, because the Neck of this Child would, at least,

least, extend the End of the Forceps two Inches, which would also extend the Bow-Part. *Tab. XVI. Fig. 3. Lett. D.* in Proportion, by which the Woman would suffer greatly. Hence it is evident, that the Forceps or double Crochet, for this Woman and Child, ought, at the Ends, to be two Inches Distance from each other, at the least; and the Bow-part ought not to exceed three Inches, or three Inches one half, from Outside to Outside, at the most. This Part, which is to inclose the Head, should be somewhat of an oval Figure, but of less Diameter, or smaller on that End next to the Handle, than on that which takes hold of the Child; and the Main of the Bow-Part, in Length, should be three Inches and one half, at least, as the Depth of the Head, from the Top to below the Ear, was as much.

From all that I have here said, we see what Inconveniences attend even the Forceps; for, although I have here given the Size of one of them, yet that Instrument is the largest that ought to be made, because, for one Woman that I have met with, that was wider than herein mentioned, I have met with ten less; and though, at full Time for Birth, this Size of the Child's Head is about the general Bulk, yet I have often found the Head bigger. I delivered two Women lately; the Child's Head of one measured

measured in Circumference, at the Top, full sixteen Inches, and that of the other seventeen Inches, and yet I brought them forth without any Instrument, the latter being born alive, the other had been dead some Time. However, if the Expulsion be hindered only by a little Disproportion of Size in the Head and Pelvis, or the Mother's Weakness, and Want of Pains, and not from any Distortion in the Form; and if there be any Reason to imagine that the Child is living, and be so far advanced, that it cannot be turned to be brought by the Feet, then the best Instrument is certainly a *Proper Forceps*, which had better be too little than too big, because of the pliable Texture of the Child's Head, § 48. which will easily yield to the Pressure.

Some Persons are for having the Forceps and other Instruments covered with Leather, or some such Thing; but this is very wrong, and is very prejudicial to the Mother. This Kind of Forceps, is twisted with Leather, in a spiral Manner, round the Bow, or that Part which goes on each Side of the Child's Head, and is betwixt it and the Uterus or Vagina of the Woman.

I observed in § 41. That, in a regular Way, there is a *Mucus* secreted, to lubricate the Parts of the Mother, for the more easy Passage of the Child, and to prevent the Parts of the Woman from being injured

by the Friction, and that, whenever that was defective, it was one Cause of difficult Labour, § 58. No. 3. *First*, then, it is evident to a Demonstration, that, wrap the Leather as carefully and as smoothly as you can, the Edges thereof will rise higher than the other Parts; whence there will be a Spiral Roughness (if I may be allowed the Expression) and let the Degree of Roughness be what it will, it must be more than that of polished Steel; whence the *Mucos*, which Nature prepares to defend the Passages, must be abraded, and the Mother in such Proportion will be injured; especially as the Forceps is never wanted, but when it must be pressed strongly by the Child's Head against the Parts of the Woman.

Secondly, It is evident, that this Leather, when it has been once wet, will not be so soft and smooth as before; and, *Thirdly*, that some Part of the Blood and Waters must be sucked up by the Leather, and lodge betwixt it and the Steel-work, where it will corrupt and stink, let the Maker be as careful as he will in covering it.

§ 102. Being thus provided, § 101. the Operator must place the Patient on one of her Sides upon the Bed, as before directed, § 42. and having every thing in Readiness, § 42. 46. he must take one Side of the Forceps (being warmed and oiled) in one Hand (the left, for Instance) and by the Help

Help of the other, introduce it into the *Vagina* on the right Side, along the Palm of the Hand, having its concave Surface next the Child's Head, thrusting it forward gently, till he finds the End of it. *Tab. XVI. Fig. 3. Let. a.* has gone as far as the Neck of the Child, but on one Side of the Head, which he will know by the Ear; In this Position, the Handle of the Instrument, *Let. b.* will be at the left Side, where it must be held by the left Hand, not suffering it to move either up or down; which it will be apt to do: The other Side is to be introduced by the *right Hand only* at the left Side of the *Vagina*, opposite to the other, and the Handles intersecting, may be fixed at the Articulation, *Tab. XVI. Fig. 3. and 4. Let. c.* and held with one Hand, while the Operator examines with the other, to find if the Ends be right placed; which done, he must turn the Face of the Child into its natural Position, and pull by the Handles with as much Force as may be necessary, till the Head comes forth; and then, quitting the Instrument, he must take hold of the Head, and bring forth the Child, as in a natural Delivery. If the Difficulty proceeds from the Smallness of the Passage through the *Pelvis*, the Shoulders frequently stop; in this Case, the Operator must introduce a Finger, or the Handle of his Forceps, *Tab. XVI. Fig. 3. and 4. Let. d. e.* betwixt the Arm

Arm and Body of the Child, under the *Axilla*, whereby the Child may more easily be brought forth.

The Makers of these Forceps also frequently run into another Error, in turning the Hooks of the Handles, for they generally make them as in *Tab. XVI. Fig. 3. Lett. d.*, whereas they should be as the other Handle, *Lett. c.* is made, because, if the Hook should chance not to be large enough to take in the whole Arm, the End of it might be forced into the *Axilla*, or, however do considerable Mischief there; whereas the End, *Lett. c.* will do for any Child.

Notwithstanding what I have here said, there are many Cases where the Head comes first; wherein the Forceps ought not to be used.

First, When there is a Certainty that the Child is dead. Because, though the Forceps is well contrived to save the Child, yet it is capable of hurting the Mother, for it is supposed here, that the Head, from its Size, cannot make its Way through the Passage by the Cervix, and it were, more bulky by the oval Part of the Forceps, which must press hard against the *Vagina*, and, consequently, the Parts between the Iron and these Bones must be much bruised: and the *Perineum* is too often torn: Therefore why should these Risques be run? Especially

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ally as there is a mechanical and safer, and more expeditious Method of doing it; both for the Mother and Operator, as will appear in the Sequel, &c. *The Markers*

Secondly, If the Forceps cannot be so well used, when the Impediment arises from the Distortion of the Bones that form the upper Part of the Pelvis, *Tab. I. Fig. VI.* because, if the two Sides of the Instrument cannot be introduced at each Side of the Head in a direct Parallel Line, they cannot easily be brought together at the Joint, so as to take proper hold of the Head.

Thirdly, When the Os Sacrum and Pubis are too near each other; for then the Head cannot advance enough to be properly within the Reach of this Instrument; and if it could reach it, it could not bring forth the Head without lessening its Bulk, or doing great Injury to the Woman. And,

Fourthly, When the Head is advanced into the Pelvis, and the Child sticks only at the Shoulders; for then the Handle alone, as above directed, is better, and less prejudicial to the Woman.

If, notwithstanding what is said in § 92. an Operator will use any Instrument to try to replace the Head of a Child that sticks against the Pubis, he should then use one Side of the Forceps, *Tab. XII. Fig. 3. Lett. a, b*, and introduce the Ends, *Let. c, d*, over the Head above the Os Pubis, and endeavour

to draw or press it towards the Sacrum ;
 by which, sometimes, the Head may be
 moved, especially if the Mother's Pains do
 not press the Child too hard against the
 Pubis. But yet the Method before pro-
 posed is much the safest and best, § 92.
 Notwithstanding these two Ways of deli-
 vering a Woman, some People are so igno-
 rant, that they make use of a Crochet, to
 the certain Destruction of the Child; and no
 small Detriment to the Mother, as hap-
 pened by a Pretender to Midwifery in this
 Neighbourhood; who being called to a
 Woman in Labour, whose Child's Head
 stuck at the Pubis, used a Crochet, which
 he introduced above the Head, and then,
 taking that End of it, which he had in his
 Hand without the Woman's Body, he pressed
 the Os Pubis with such Force as to bend
 the Crochet, although it was as thick as a
 Finger; by which the poor Woman was
 greatly bruised, and the Child was de-
 stroyed; both which might, by a skillful
 Person, have been avoided. § 93. Some of these Inconveniences,
 § 101, 102. induced M. MABRICEAU to
 contrive another Instrument, which he
 endeavoured to make the World believe,
 was much more beneficial than the other;
 this he called a Tire-Tête; and he says (n),

(n) Accouchm. Vol. I. p. 365.

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It is incomparably better than the Crochet; and then, after giving us Part of the Reasons above mentioned, he thus proceeds: This Instrument (*Tire-Tête*) is so proper for the Occasion, that the Bulk of the Child's Head is lessened one Way, by making it longer with pulling. He directs (e), That an Incision be made by a broad two-edged Knife, *Tab. XVI. Fig. 5.* in the Form of the sharp End of a Pike, between two Sutures, large enough to give Passage to a round Plate at the End of a Staff of Iron, *Tab. XVI. Fig. 6.* which is to be introduced into the *Cervix*. That done, a *Canale*, with another Plate at its End, *Tab. XVI. Fig. 7.* is to be put over the Staff, till the Plate at its Head be close to the Child's Head; and then a Screw, *Tab. XVI. Fig. 8.* is fixed at the End of the Staff, *Tab. XVI. Fig. 6. Let. c.* which is put into the *Vagina*, to press the last Plate close to the Head, and to hold the *Canale* fast: This done, the Operator then pulls out the Child. *AM. M.* This Operation may be said to be four-fold: First, of By making an Incision between the Sutures of the *Cervix* (e) *Accouchm. Vol. I. p. 366.*

(e) *Accouchm. Vol. I. p. 366.* *nium,*

coming with a two-edged Instrument, in
 support of the Head End of a Pike, is
 so evident, even though the Head
 should be within two or three Inches
 of the external Orifice of the *Vagina*,
 without any additional Aggravations of
 Swelling, &c. that there is great Danger
 of wounding the Mother, at the Introduc-
 tion of this two-edged naked Instrument:
 And how much more must the Danger be
 increased, when the Head is at a greater
 Distance, or inclosed by a swelled Part?
 And to all this the Patient's Motion of her
 Position, from her Pain, &c. the least
 Addition of which is of the worst Conse-
 quence, while this naked Instrument is
 pushing the *Vagina* or Womb: Moreover,
 it is not the Fontanel which presents, but
 that Part of the Head which is generally
 called the Crown, near where the Lamb-
 doidal and Sagittal Sutures meet, *Tab. 1.*
Fig. 3. and 4. § 51. where it is not always
 very easy to make an Incision large enough
 for the Admission of this Plate, § 103. for
 it must be made directly opposite to the
 Entrance of the *Vagina*. Besides, after the
 Incision is made, and the Instrument
 brought on again, the very Pressure of the
 Womb, &c. will close the Opening, so as
 often to make the Edge of one *Os Breg-*
matis to lap over the other, which will
 render

render it difficult for the Operator to introduce that Iron Plate of the *Terebra*, that *MAURICEAU* contrived to go within the *Cranium*, *Tab. XVI. Fig. 6. Det. 10* which may be said to be the *second Operation*. When this Plate is introduced, the Operator must hold the Staff in one Hand, while, in the *third Place*, he slides the *Cannula* with the other Plate, *Tab. XVI. Fig. 7.* which he pushes to the Child's Head, and then, *Fourthly and lastly*, he fixes the Screw, *Tab. XVI. Fig. 8.* with one Hand, still holding the Staff with the other; and then he must draw forth the Child; all which will take up a considerable Time, and will give the poor Woman much Pain.

§ 105. The next Instrument I shall take notice of, is called the *Terebra Occulta*, by *OUEN (q)*; the component Parts of which may be seen in *Tab. XVI. Fig. 9.* and 10. With this Instrument, *OUEN (q)* opens the *Cranium* betwixt the Sutures, and with his Fingers introduced into the Perforation, as far as he can reach, breaks all the Substance of the *Cerebrum*, brings out the Brain, and then endeavours to squeeze the *Cranium* into less Compass, and so draw out the Child by that Finger which was introduced within the Skull.

Wond. & often to make the Edge of one of the (q) Pages 106. (q) Page 107. 101. 211. In

In order to open the *Cranium*, he takes hold of the *Terebra Occulta* by the Handle, holding his Fore-Finger against that End of the *Capsula* marked *e*, *Tab. XVI. Fig. 9.* Then he introduces two Fingers of the other Hand quite to the Child's Head, and slides the *Terebra Occulta* along that Hand, till its End, *a*, *Fig. 9, 10.* reaches the Child's *Cranium*; when, with one Finger, he directs the Aperture at the End of the Instrument, so that the Point *a*, *Fig. 9, 10.* shall cut the Suture lengthways and not crossways; and then thrusts the Handle with the Palm of the Hand, with sufficient Force to penetrate into the Suture: This done, he must make the Incision large enough, by moving the End or Piercer, *Let. a*, with his Fingers which are within the *Vagina*: Then, by removing the other Hand from the Handle, the Spring draws the Piercer within the *Capsula* again; after which, the Operator withdraws the Instrument, and then introduces his Finger into the *Cranium*, as is abovementioned, to break the *Cerebrum*; but sometimes the Compression upon the Head, without the Assistance of the Operator after the Incision is made, will squeeze out Part of the Brain: When the Head is sufficiently evacuated, the Bones may be pressed almost together, and, with a Finger therein bent, may be brought away

away with more Ease; but if the Operator has not sufficient Strength in his Fingers, he may introduce a Crochet into the Child's Head through the Orifice, and therewith deliver the Woman.

This Operation, though less hazardous and more expeditious than with M. P. R. C. R. A. U. S. Tire-Tête, is yet not very easy for the Patient: because the Operator must generally have his whole Hand within the Vagina, especially if the Head stick above or betwixt the Os Pubis and Sacrum; and that too with his Fingers bent towards the Palm, which makes it to take up the greater Space, because he cannot bend one Finger alone, to exert any Force to break and evacuate the Brain, and draw forth the Head, without bending the others also. Besides, in breaking the Brain, the Operator must change the Posture of his Hand two or three Times, which still adds to the Woman's Pains: Moreover, in some Cases, the Force requisite to bring away the Child, is more than any one can exert with either one or two Fingers introduced within the Cervix.

This Instrument, O. L. D. tells us (r) was first made use of in December 1709, and was of his own Invention, which may be true: But DE VENTRIER, 56 Years ago

used a Piercer, hid in a *Capsula* or Sheath, to perforate the Head or Belly of a Dropical Child. And LA MOTTE (*Obs.* 260.) opened the Head of a Child, in 1691, that was separated from the Body, and left in the Womb, with a Knife in a *Camula*: And I also have made use of one of the same Kind of *Terebræ Occultæ*, as OULD's, upwards of seventeen Years ago, which I had made after my own Directions, in this City (*York*); only mine wants the Spring, which is really no way material; because the Piercer is easily brought within the *Capsula* in pulling out the Instrument, after having made the Incision. When I read OULD's Book, I had one of his *Terebræ Occultæ* made, but with this Improvement; that the *Capsula* was made to screw off above the Part wherein the Spring is fixed, *Tab. XVI. Fig. 10. Let. c*; by which Means, after performing any Operation, I can clean the *Stylus*, and Inside of the *Capsula*, which I find OULD cannot do; and therefore, in Time, his *Terebra* must rust and stink. LA MOTTE (s) opens the Head with a Knife, and then introduces his Fingers into the *Cranium*, and draws forth the Child, if the Head be within Sight; but if higher up, then he used the common Scissars; and if the Head be at the Ex-

(s) *Obs.* 247, 250, 403, 404:

tremity of the *Vagina*, he used a Piece of Card, or Leather, which he conducted with his Hand, and applied on the Head, sliding along it a Knife which cuts but on one Side, then he thrusts it into the *Cranium* to make a proper Orifice; or else plunged his Scissars through the *Cranium* into the Brain, and opened the Shanks to make a larger Opening; and introduced a Pair of Forceps, with which he used to extract the Stone out of the Bladder, and fixed one Branch in the Inside of the Skull, the other on the Outside, and so brought out the Head. He used these Forceps, because he had recollected of what Use a Pair of Blacksmith's Pincers had been in the like Case. I wonder, whether the Reading of this Case in LA MOTTE induced a Person, who practised Midwifry in this City (*York*), to use a Pair of Blacksmith's Pincers in a Case of the like Nature at *Shipton*, about four Miles from hence; or whether it was an ingenious Thought of his own? Sorry I am, that so many of our modern Practitioners in Midwifry follow this Method of LA MOTTE's, by piercing the *Cranium* with a Pair of Scissars, which are then opened to break the Brain, and must be shut again before they are withdrawn; which may either cut or nip some Part of the *Vagina* or *Os Tinca*; after this, the Crochet is to be introduced into the Opening,

Q 2

ing, and to be fixed into the Skull; which is attended with the Inconveniences, § 104, 105. and must endanger the Wounding of the Womb or *Vagina*, because the Point of the Crochet must go through the Skull, and consequently be next to the Womb or *Vagina*.

§ 106. There is also another Instrument for opening the Head, called a Ring-Scalpel, invented by Dr. SIMPSON, Physician at *St. Andrew's* in Scotland, which he thus describes (t): This is composed of two Parts, the broad Ring, and a short Scalpel riveted to it, *Tab. XVI. Fig. 11.* The Ring, *Let. a*, is made large enough to pass over the first Joint of the Fore-Finger, and no farther; and the Scalpel is about an Inch in Length, and a Third in Breadth, smooth and blunt along the upper Side, *Tab. XVI. Fig. 11. Let. b*, sloping to a sharp Point. This the Doctor uses in the following Manner: ' He first examines where the Sutures
' of the Child's Head lie; then puts the
' Ring upon his Fore-Finger, over the first
' Joint, with the Edge of the Scalpel, *Tab.*
' *XVI. Fig. 11. Let. c*, towards the Palm
' of his Hand; then, bending that Finger
' at the middle Joint to a Right-Angle, the
' Edge of the Scalpel becomes parallel with
' the first Phalanx, and is secured from

(t) *Med. Ess. Vol. V.*

‘ doing any Harm: Then in this Posture
 ‘ he introduces his Hand, and directs his
 ‘ other Fingers extended towards the Su-
 ‘ tures which he had fixed upon for the In-
 ‘ cision; and having found them, the
 ‘ Thumb and other Fingers hold the Head,
 ‘ while between them he stretches the Fore-
 ‘ Finger (hitherto bended) over the Su-
 ‘ tures; and with it presses in the Scalpel,
 ‘ cutting thro’ the *Pericranium* and *Dura*
 ‘ *Mater*, and flitting them so far as to make
 ‘ Room for his Fingers.’ In doing this,
 because the Ring is apt to be drawn off, he
 bends a little the last Joint against the Ring,
 to keep it fixed during the Operation: He
 causes the Scalpel to be made as broad almost
 as the Ring, to make the Orifice the larger.
 The same Method he takes to extract the
 Head, when separated from the Body and
 left in the Womb. We find there are not
 only the same Inconveniencies attending this
 Operation, as that with the *Terebra Oc-*
culta, but that they are, in some Respects,
 even greater.

T A B. XVI. Explained.

Fig. 1. represents Twins in the Womb,
 one of which has one of its Legs betwixt
 the other’s Thighs.

Fig. 2. shews a Crochet, which, for
 the more convenient Carriage, screws off

at *a*: *b*, one End made like a Crutch, to be used in some Cases, as in *Fig. 14*.

Fig. 3. represents a Side-View of one Side of the Forceps: *a*, The End which is to be slid over the Child's Head. *b*, The Bow-part, which is placed on one Side of the Child's Head. *c*, The Part where I contrived it to screw off, for the more easy Carriage. *d*, The End or Hook, which is sometimes made use of to be put under the *Axilla*: This End ought to be made as in *Fig. 4. Let. e*.

Fig. 4. shews one Side of a Pair of Forceps, whose End is made like a Crochet. *e*, The Manner in which the crooked End of the Forceps ought to be made.

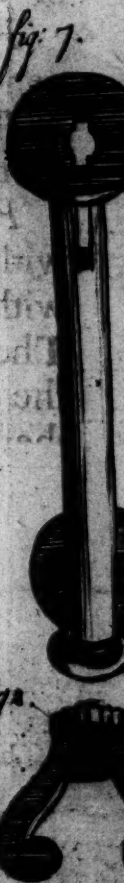
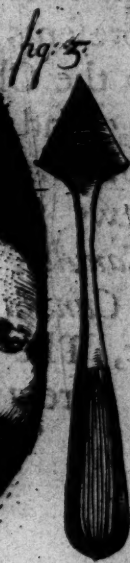
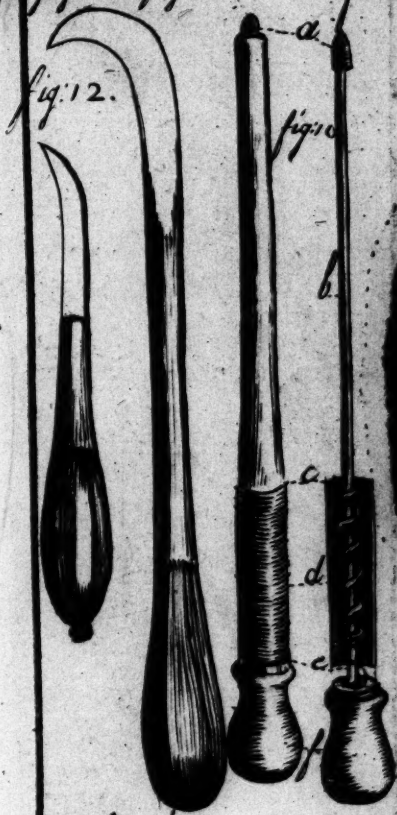
Fig. 5. represents MAURICEAU's Pike to penetrate into the Child's Head.

Fig. 6, 7, and 8. shew the different Parts of MAURICEAU's Tire-Tête.

Fig. 9. shews OULD's *Terebra Occulta* within the *Canula*; and *Fig. 10.* shews it without the *Canula*. *a*, The Piercer. *b*, The Staff. *c*, The Part where I contrived the *Canula* to screw off, in order to clean the Staff, &c. *d*, The Box or Part wherein the Spring is fixed.

Fig. 11. shews SIMPSON's Ring-Scalpel. *a*, The Ring, or that Part which is put on to the Finger. *b*, The Back of the Blade. *c*, The Edge.

Fig. 12. shews MAURICEAU's crooked, sharp-



sharp-pointed Knife; and *Fig. 13.* shews his hooked Knife.

Fig. 14. shews a Child lying nearly a-cross the Womb, with one Arm in the *Vagina*.

§ 107. These dangerous and tedious Ways of delivering Women, as are mentioned in § 101, 102, 103, 104, 105, 106. induced me to spend a few serious Thoughts, in order to contrive some more safe and expeditious Method of relieving the Fair-Sex, and I hope my Labour has not been in vain. And as I always professed myself an Advocate to serve my Country to the utmost of my Power, I do in this (as I have hitherto done upon all Occasions) prefer the *Public Good* to my own private Interest, and therefore now take this Method of laying open to the World the Improvements I have made, that every Person may be as capable of assisting the Fair-Sex, as myself; after having laid them before the Learned Societies of the two Capital Cities of *Great Britain*, who have greatly approved of them.

That the Reader may the better understand me, I have had the Instrument engraved, as in *Tab. XVII. Fig. 6, 7, 8, 9.* whereby the different component Parts of it may be seen, and are there explained; by which the Reader will soon see the Superiority it has above all other Instruments yet made, for the Use it is designed.

Fig. 6, 7, 8, and 9. in T A B. XVII.

Explained.

Fig. 6. *a*, The Piercer, or End that enters the *Cranium*. *b*, the Joints, by which the Wings, *c*, are fixed to the Staff. *d*, The Joints by which the Steel Slider *f* is fixed to the Wings. *e, e*, are two small hollow Pieces of Steel screwed into the Staff, to guide the Slider, *f*, which reaches down to the Handle, *b*; *g*, A Button, which screws into the Slider *f*, and runs in a Groove in the Handle, *b*, by which the Wings may be opened and shut. *i*, A Hole in the Staff for the Screw, Fig. 9. *k*, Another Hole for the same Use: By these, this Instrument may either be used as OULD'S *Terebra Occulta*, when only the Piercer, *a*, can go out of the *Canula*; or it may go quite out, as in Fig. 8. *l*, Another Hole, for the Screw to fix the Piercer from going out of the *Canula*, and answers to the Hole *c*, in Fig. 7.

Fig. 7. is the *Canula*; *a*, The End next the Piercer. *b*, The Nitch for the Screw to slide in. *c*, The Hole to fix the *Canula* and Staff.

Fig. 8. represents the whole Instrument put together, which is about twelve or thirteen Inches long; and each component Part is in Proportion.

Fig. 9. *a*, represents the Screw, to fit the Holes, *i, k, l*, in Fig. 6.

I will

I will now suppose the Reader to have perused the Figures of the Instrument, and to be sufficiently Master of its whole Mechanism; and, at the same Time, I will suppose a Patient in the melancholy Condition abovementioned, § 101. No. 1. and that the Child is either dead, or must be killed before it can be brought forth. In which Case, I will introduce a Finger (or, at most, two) of one Hand (suppose the left) into the *Vagina*; then I take the Instrument in the other Hand, holding the Fore-Finger against the End of the *Capsula*, marked with an Asterism, *Tab. XVII. Fig. 7.* to keep it over the Piercer *a*, *Fig. 6, 8.* with the Side wherein the Screw is fixed, next to the Finger which is within the *Vagina*; and then gently slide the other End of the *Capsula*, *a*, *Fig. 7.* along the Finger, till it reaches the Child's Head; which done, I guide (with the Finger already introduced) the End of the *Capsula* *a*, so that the Piercer, marked *a*, *Fig. 6, 8.* may be easily thrust into the *Sutura Sagittalis* (which a small Force will do) so far as to permit the Wings, marked *c*, *c*, *Fig. 6, 8.* to be opened, as in *Fig. 6.* which is done by applying the Thumb of the Hand (which holds the Instrument) to the Screw or Button, *Let. g*, *Fig. 6, 8.* in the Handle of the Extractor, and thrusting it up: Then the Operator, by turning the Instrument once or

or twice half round, will so break the *Cerebrum* with the Wings *c, c*, that it will easily ouze out, if necessary. This is done with so much Ease, that the Mother is not in the least sensible of the Motion of the Instrument. The Brain being thus broke, I fix the End of each Wing, *a*, *Fig. 6.* against the Center of each *Os Bregmatis*, which is done in Course, when the End of the *Capsula a*, *Fig. 7.* is a-cross the Suture, as may be felt by the Finger within the *Vagina*; which now must either be withdrawn, or (what is still better) may be kept parallel to the Instrument, with its End against the Head of the Child; by which the Operator will find if the Bones should give Way; which, if the Child has been long dead, may happen. All this Operation, thus far, may be done with Ease, in less than a Quarter of a Minute, and with no more Pain to the Patient, than what may be occasioned by the Introduction of one or two Fingers into the *Vagina*, which will scarce give any Uneasiness, especially at this Time, when Nature may be supposed to have relaxed the Parts for the Birth.

The Extractor being thus fixed, the Operator must draw forth the Child directly, and need not be long about it, if all the Fault lies only in the Head being too large, or in the Distance betwixt the *Os Pubis* and *Sacrum* being somewhat too small; for, *First*, This Instrument, being fixed in the *Apex*, guides

guides it directly to the Center of the Passages. *Secondly*, By pulling that Part, it makes the Head more oblong, and consequently narrower. *Thirdly*, The *Cerebrum*, being so much broken, can easily ouze out through the Incision, when the Bones of the *Cranium* are compressed by the *Pelvis*. *Fourthly*, The Wings of the Instrument being fixed against the strongest Part of each *Os Bregmatis*, the greatest Force may be exerted with less Danger than by any other Instrument. *Fifthly*, The Danger of wounding the Patient, as with MAURICEAU's naked Instrument, and LA MOTTE's Scissors, is here avoided. *Sixthly*, This Extractor is not in such Danger of slipping as the Crochet is; and, *Seventhly*, It is fixed with more Ease to both the Woman and Operator.

I hope I have demonstrated sufficiently, even to the meanest Capacities, that my Method of delivering Women in the two first-mentioned Cases, § 101. No. 1, 2. is preferable to any other hitherto made use of; I shall therefore, in the next Place, endeavour to prove as evidently, that in the Third Case, § 101. there is no Instrument can be so proper as mine, whenever the Head is separated from the Child's Body, and left in the Womb: And, that the Reader may be the better able to judge, I will just mention the most approved Methods

thods hitherto taken, to deliver a Woman in this most unhappy Condition; which may very properly be said to be very lame Assistance; whereas, by my Method, it is so far from being more dangerous than any other difficult Births, that it is less so than most.

§ 108. When the Head is separated from the Child's Body, and left in the Womb, it has always been, by all Authors, looked upon to be the very worst Condition a Woman can labour under; and LA MOTTE, in his very last *Reflection*, says, No one, but he that is conversant in Deliveries, can imagine what Difficulty there is in extracting a Head from the *Uterus*, that is separated from the Body; because, as the Head is in some Respects round, it is difficult to lay hold of it; and if it remain any Time in the Womb, after being separated from the Body, in many Cases, the *Os Uteri* will close so much as to prevent its being brought away, except with the greatest Difficulty.

§ 109. MAURICEAU (1) tells us, that the Difficulty of this Operation is such, that two or three Surgeons have successively forsaken the same Operation, not being able to perform it; and the Patient, consequently, was lost. And LA MOTTE (*Obs.* 261.) tells us, that Mr. PEU served two Women

(1) Accouchm. chap. 14. Liv. ii. vol. I.

in the same Way, who both perished. Towards removing this Evil, MAURICEAU advises, *First*, 'To introduce the right Hand into the Womb, and find out the Mouth of the Child, into which put two Fingers, and the Thumb under the Chin, by which hold to draw it forth gradually.'

Secondly, 'If the first Attempt failed, then to extract it by a Crochet, which he directs to be fixed in the Eye, Ear, or behind the Head, or into some of the Sutures.'

Thirdly, 'To introduce a Fillet or Slip of Linnen, about four Fingers in Breadth, and three Quarters of an Ell in Length: The Operator is to hold the two Ends in one Hand, and to introduce it double, with the other, into the Womb; and, by fixing the Head in this, as a Stone in a Sling, to draw it forward.'

Fourthly, Mr. AMAND contrived a Purse, instead of this Sling of MAURICEAU'S. The Purse was made with running Strings, something like the Carl of a Peruke, which is fixed on the Back of one of the Operator's Hands, by Means of Loops for that Purpose; thus he is to introduce his Hand, and take hold of the Head; and then, by Means of two Strings, which are continued to the Purse, at the End of the Fingers, it is pulled over the Head, and then the Hand must be removed.

Fifthly,

Fifthly, MAURICEAU, where these Methods are unsuccessful, recommends, that the Sutures should be opened by a crooked, sharp-pointed Knife, in order to evacuate the Brain: This Knife is long enough to reach into the Womb, *Tab. XVI. Fig. 12.* But PAREE and GUILLEMBEAU propose a short Knife, that might be inclosed in the Operator's Hand; and SIMPSON recommends his Ring-Scalpel, as in § 106. LA MOTTE, in *Obs. 260.* used a *Canula*, in which was a Knife, and with it opened the Head wide enough to admit his Fingers; and sometimes he opened the Head with a Pair of Scissars, as in *Obs. 316. 1712.*

§ 110. In order to shew, that the first Method proposed, § 109. will be insufficient, it is necessary to inquire, what are the Causes that hinder the Extraction of the Head with the Body.

First, When they proceed from Putrefaction.

Secondly, When the Head is too large.

Thirdly, When the Passage betwixt the Bones is too strait: And,

Fourthly, When the Chin sticks against one Bone, while the Back-part of the Head sticks against the opposite Side, *Tab. I.*

Fig. 4.



First,

First, If Putrefaction be the Cause of the Head separating from the Body, how can we expect the single Articulation of the lower Jaw, § 109. No. 1. can bear a sufficient Force to bring the Head with it, when the Head, which was connected to the Trunk by the Intervention of so many Articulations and Muscles, could not bear the Force necessary to bring it away? The same Argument holds good in any of the other Cases; because the same Degree of Strength in those, bears the same Proportion betwixt the Neck and Jaw in its full Strength, as in its putrid State: And by bringing the Child, if possible, by this Means, the *Apex* cannot come first; the Consequences of which are already explained, § 48.

§ 111. In the second Case, § 109. we shall find great Difficulty in fixing the Crochet; for it is well known to be no easy Matter to do, even when the Head is in the *Vagina*, and, in one Respect, kept steady by its Connection to the Body; but, supposing the Crochet fixed, the Danger of its slipping in the Extraction (which may happen to the most cautious Operator) is not a little (especially if the Child has been any Time dead) and then the Woman may be ruined. Besides, if the Head be not in such a Direction, that the Sutures will close as it advances (which in this Case seldom happens) then it will be scarce possible
to

to extract it thus: But the Danger is still greater, when the Head is disengaged and loose in the Womb; for then the Difficulty of fixing the Crochet is greater, as the Head can only be held and directed by a single Hand in the Womb; but, supposing it fixed, the Danger of slipping is still the same.

§ 112. The Difficulty in putting the Head into the Linnen Cloth with only one Hand, and preventing the Cloth from wrinkling, in the third Case, § 109. is not a little; and it not only adds to the Bulk of the Head, but also abrades the *Mucus*, &c. which lubricates, and should defend the Passages from being injured, and thereby renders the Extraction more difficult: But in either the second or third Case, § 110. this Method would be ineffectual, as it neither lessens the Head, nor widens the Bones.

§ 113. The Difficulty in putting the Head into the Purse, as mentioned in § 109. No. 4. is as great, if not greater than putting it into the Sling; but supposing it to be in, the same Objections remain, as in that of § 112.

§ 114. In the fifth Case, § 109. the Danger of having either a crooked, long, or short Knife naked in the Womb is evident, if the Patient should move, or if the Instrument should slip from the Head of the Child:

Child : Besides, it is not easy to introduce the Hand in a Form necessary to contain the short Knife in it; and, was it introduced, there would yet be an insurmountable Difficulty, as there would want one Hand quite disengaged, to find out the Sutures, and hold the Head steady enough to resist the Force in applying this Instrument. The Ring-Scalpel is indeed a much more proper Instrument, but that is liable to most of the same Objections; because the same Hand must hold the Head, prevent the Point from hurting the Patient, find out the proper Place where the Incision is to be made, and perform the Operation.

§ 115. OULD is for opening the Head, in this Case, with his *Terebra Occulta*, as mentioned before, § 105. but that Method, though better than many of the foregoing, is attended with its Difficulties; for, suppose the Orifice made with this Instrument, and that the Operator had his Finger introduced therein, yet, as the Head is fixed to nothing to keep it steady, he will find it no easy Matter to break and scoop out the Brain, because both the *Ossa Bregmatica* will so closely squeeze the Finger, as that the Head will turn as his Finger turns; and the same Objections hold good here, as in § 105.

§ 116. Now let any considerate Person reflect on the several Methods of, and In-

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struments

struments for the Extraction of the Head remaining in the Womb separated from the Body, with the Objections thereto, § 110, 111, 112, 113, 114, and 115, and I am convinced he will allow, that my Method with the Extractor, as mentioned in § 107. is much the safest and most expeditious; for the Operator has only to introduce one Hand into the Womb, by which he holds the Head steady, and with the Thumb or a Finger of the same Hand, guides the End of the *Capsula*, in the Manner as directed in § 107. to the Suture at the *Apex*, and then fixes the Instrument, and brings out the Head: All which may be done in a small Part of a Minute, by any Operator of Skill and tolerable Dexterity; so that now this, which heretofore was looked upon to be the very worst Labour any Woman could have, is, by my Method, as easy, safe, and expeditious as any other Labour can be, where Instruments are necessary; for here the Dangers and Difficulties of the other Methods, mentioned before, § 110, 111, 112, 113, 114, and 115. are avoided, and the Head is properly placed, having the *Apex* in the Center, is lessened in Bulk, and brought away without the least Danger of wounding the Patient. Wherefore we need not be under such dreadful Apprehensions of the Head being separated from the Body and left in the Womb: Nay, in some Cases,

Cases, we should prefer it; because, as the Bones which form the lower Part of the Head or *Cranium*, are more compact, and not so loosely joined as the Bones which form the upper Part, so, consequently, they cannot so readily mould themselves and give Way; whereas, when the upper Part of the Head comes first, it will mould into any Form, § 48.

§ 117. The next Operation is, where the Child is dropfical in either the Head, Breast, Belly, or *Scrotum*: If in the first, the Directions given in § 101. must be followed: The second rarely happens so far to distend the *Thorax*, that it cannot pass after the Head; but if it should so happen, the Breast must be perforated to let out the Water. Suppose, therefore, that the Head had passed the *Os Uteri*, and the Breast should stick, and the Operator, by introducing a Finger into the Womb, should find the Shoulders pretty free, but the *Thorax* so distended as to convince him of its Contents, he must prepare to make the Perforation therein.

MAURICEAU (u), in this Case, says: The Opening must be made by a crooked Knife, *Tab. XVI. Fig. 13.* the left Hand must be introduced to the Part where the

(u) Accouchm. vol. I. p. 203. Liv. II. chap. 18.
R 2 right,

right, the Knife must be put up; and then the Point, *Tab. XVI. Fig. 13.* must be turned to the Child's Belly to make the Puncture. By looking at the Instrument, the Reader will find, that this crooked Knife is not shaped like a common Bistory (as one might imagine from its Name, *crooked*), for it should rather be called *hooked*, *Tab. XVI. Fig. 13.* the Joint being at least an Inch and half from the Back of the Knife, where the Bending begins.

Now suppose the Head of the Child to have passed the *Os Uteri*, and that the Operator, by introducing a Finger, finds the Breast too large; it will then be difficult to put MAURICEAU's Method in Practice, for the Passage is taken up with the Shoulders and Part of the Breast; which will scarce give Liberty for the Operator's Hand to be forced in, to direct the Knife, by which the Operation will be rendered very difficult, if at all practicable, especially in a Dropsy of the Abdomen, when the Passage is filled by the *Thorax* and Arms. Hence we see, the *Os Uteri* will be extended considerably more than with the Bulk of the Child only; whence we may very naturally imagine the Child to be very monstrous indeed, that cannot be brought forth whole, where there is so much Room to spare.

§ 118. From what has been said, § 117. it is evident, that either *OUR LORD'S Terebra Occulta*

Oculus or my Extractor are more proper for this Operation, than MAURICEAU's Knife, both with Respect to the Patient and Operator: For, suppose a dead Child sticks by the Breast, as above; my Extractor may be introduced along one or two Fingers, in the Manner mentioned in § 107. till the End of the *Capsula*, *a*, be placed betwixt the Neck and Clavicle; or else to that Part above the *Sternum*, where the *Thymus* lies; and then the Piercer must be forced into the Cavity, by which not only the Water may be evacuated, but also the Child may be brought forth, much better than with the hooked End of the Forceps put under the *Axilla*; for, when the Operator pulls by such Hooks, he prevents the *Scapula* and *Oss. Humeri* from yielding, as Nature seems to have intended by their pliable Texture, § 48. because, by pulling either at the Head, or by this Instrument after it is fixed within the *Thorax*, as above directed, the Shoulders recede, and may be pressed into much less Compass than when pulled by the *Axilla*.

§ 119. The Dropsy of the Belly, or a Tympany, is not to be discovered till the very Instant the Operation is to be performed, that is, when the Shoulders are extracted, and so much of the Body till the extraordinary Size of the Belly hinders its coming out any farther. In this Case, the

Operator cannot avoid introducing one Finger at least into the Womb, to examine the Belly of the Child; and if he finds that the Abdomen must be perforated, he may introduce my Extractor (fixed with the Screw, so that the Piercer only can go out of the Capsula) in the Manner before directed, § 107. to the proper Place, and then push the Piercer in, and open the Abdomen; when the Water or Wind will immediately go out, and the Child may be brought forth directly. An Ascites may also hinder the Birth, although the Feet might be brought forth; but then this Operation might be much more easily performed, both to the Mother and Operator. The Dropsy of the Scrotum must also be removed by perforating that Part by the same Instrument.

§ 120. As I have been so successful in finding out a Method of relieving the Mother by the abovementioned Invention, § 107. I hope I have been no less so in finding out another Way of assisting the Mother, and preserving the Life or a Limb of the Child also in one particular Case, which has always been looked upon to be very bad. I shall, in treating of this, as I have done before, first shew the Methods which some have practised, and then shew my own.

If an Arm, that presents in the Beginning of Labour, should, through Ignorance, be suffered to advance so far, and continue so

so long in the Passage, that from its Swelling, and the Womb's Contracting, *Tab. XVI. Fig. 14.* it cannot be put back, as some imagine; then the common Method has been, by such ignorant People, to separate this Member from the Child, in order to come at the Body, to extract that, for the Preservation of the Mother's Life. Though this most cruel and inhuman Method has been practised by some weak, ignorant (I may say, wicked) Persons, yet I am convinced, from repeated Instances during eighteen Years Practice, wherein I have had many of these worst Cases, that there never can be a Case, where it will be necessary to kill (I should say, murder) the Child by taking off the Arm; because this Operation can never forward the Birth in the least, as will more evidently appear in the Sequel. I shall not take up any of the Reader's Time by shewing the various Methods used to separate this Limb from the Body of the Child, because it is not to be vindicated; and whoever are guilty of such Practice hereafter, ought to be prosecuted for Male-Practice, and for wilful Murder.

§ 121. Amongst the many Instances I have met with, I shall mention some of the worst of them.

It is an Arm, that presents in the Beginning of Labour, should, through Ignorance, be cut off, and continued to advance or Retard.

OBSERVATION XXI.

In 1740, I was sent for to a Person in the Parish of *Richal*, about Ten Miles from *York*, who had been in Labour for some considerable Time; the Membranes broke, and all the Waters had been evacuated two Days before I was sent for, and the left Arm immediately then presented; which, by the great Skill and Strength of the Midwife, was drawn out as far as possible not to be pulled off; infomuch that the Shoulder-Point as it is commonly called, might be touched within the *Vagina*; and the Arm was swelled to above double the natural Bulk, by the close Stricture of the *Os Uteri*. In this Condition I found every Thing at my Arriyal; when, with much Difficulty, I introduced a Finger into the *Uterus*, to find out the true Position of the other Parts of the Child, and soon found that it lay nearly quite a-cross the Mother's Body, with its Belly towards the Woman's. I then attempted to introduce my right Hand into the Womb to search for the Feet, but could not, as the Arm was so swelled; I then placed my Thumb under the *Axilla*, and got two of my Fore-Fingers introduced within the *Os Uteri*; and so thrust with my Thumb obliquely upwards, towards the Mother's left Side,

Side, and at the same Time pulled the Os Uteri with my Fingers, so as to bring it over the Shoulder-Point; which, indeed, required all the Force I could exert: I continued to push the *Axilla* upwards, and soon got the Child's Arm so far within the Womb, as to force my Hand in, to enable me to reach the Child's Body, and soon got hold of a Knee, and then of the Feet, by which I brought it forth; and, to the Surprize of every Body, it proved a living and healthful Child; whose Arm soon recovered by proper Fomentations, &c. although it was above double the Bulk of the other: The Woman recovered very well,

§ 122. If ever there was Occasion to have separated the Arm from the Body, it was in this Case, § 121.

First, Because the Arm was swelled to above twice its natural Bulk, whereby it filled up the Os Uteri and a great Part of the *Vagina*.

Secondly, Because no Pulse could be felt in the Arm, and the Mother had not been sensible of the Child's stirring, for some Time; and,

Thirdly, Because the Mother was become very weak, for Want of Rest, &c.

There

These Reasons might, indeed, have induced some ignorant Persons to have attempted an Amputation of the Arm; because I have met with Instances wherein it has been done, when none of these Reasons existed; as happened in the following Case:

OBSERVATION XXII.

In April 1743, I was sent for to assist the Wife of one Dalton, a Butcher in this City (York), whose Labour began about Eight o' Clock in the Evening: The Membranes broke, and an Arm presented; upon which, the Midwife prevailed upon the Woman to send for one, who calls himself a *Man-Midwife* and *Surgeon*, although the Patient beg'd to have me to deliver her. This Man attended about Three o' Clock in the Morning, and tried frequently to thrust the Arm into the Womb again, which at every Pain returned to the Situation he found it in, as it always will if the Operator does not prevent it by altering the Position of the Child, whose Belly was towards the Mother's. Thus he tormented the poor Woman for three Hours; and then endeavoured to bring forth the Child by pulling at the Arm, which put the Woman to so much Torture, that she desired him to desist. He, on the other Hand, begged she would have a little

a little more Patience and she would be delivered soon, and then very wisely resolved to take off the Arm, which had given him so much Trouble, and accordingly cut it off about the Middle of the *Os Humeri*, at the same Time wounding the Woman an Inch and a half through the *Vagina*, inso-much that she was maimed on that Side for some considerable Time after.

Any Person, ever so little conversant in Surgery, could have told this Man, that, upon cutting the Muscles of the Arm, the Flesh would recede from that Part of the *Os Humeri*, where he cut or broke it, and would leave it quite bare for near three Quarters of an Inch, as it proved when I measured it, and that, consequently, he ought not to have cut it off there, but rather at the Joint.

After this Work thus dexterously finished, he again attempted to deliver the Woman, and tormented her for another Hour, but with no better Success than before, and then the poor Woman, quite spent with four Hours fruitless Toil, insisted upon sending for me, and I arrived at, or soon after Seven o'Clock. I enquired into the Nature of the Case, &c. and then searched the Woman, and was not a little surprized to find the remaining Part of the *Os Humeri* quite bare, it having cut my Finger, so for he had never told me what he had done.

But,

But, how much soever, I was surprized at this, I was more amazed to find she had not delivered the Woman, because the Child's Belly was to the Mother's; and the Os Uteri was sufficiently dilated, so that she might have easily reached the Feet. After I had touched the Patient, she was very desirous (as she well might) of knowing her Fate; I told her to keep up her Spirits, for she might be soon delivered, and that too without any Instrument except the bare Hand. I then told the Surgeon who was with her, that as he had been first sent for, I would compliment him so far, as to give him another Opportunity of delivering her, but he declined it, saying he could not do it. I then prepared myself, and giving my Watch to one of the By-standers, I desired her to observe how long I should be in delivering the Patient; and then begun, and delivered her of the Child, and fetched the After-birth also, in less than half a Minute by the strictest Observation. How the Surgeon and the By-standers looked at each other in Amazement, is easier to be imagined than expressed. From what has been said it is evident, that he had no Occasion to cut this Child's Arm off. First, Because it was not out of the Womb as far as the Shoulder. Secondly, Because the Os Uteri was sufficiently dilated to permit the Introduction of the

the Hand. *Thirdly*, Because the Patient had no Flooding. *Fourthly*, Because the Cutting off the Arm could not forward the Delivery, for the greatest Bulk of the Child is in the Head, Shoulders, and Hips; all which remained of the same Size, and were not too large for the Pelvis, because they were all whole when brought forth. And, *Fifthly*, Because the Child was alive, and the Mother in no dangerous Way, as to Flooding, &c. when he did it; but with what Instrument he cut this Arm off, I could not find out, for he would never tell me.

Where-ever I have been called in, I never found any Pretenders to the Practice of Midwifry, who ever attempted to cut off an Arm of any Child, except this Person, and another Man who was a Cotemporary with him, and were together at the same Place to be instructed: But this other Person shewed himself the better Surgeon, by considering the Consequences of having the sharp End of a Bone cut or broken in the Womb, and therefore he more judiciously cut off the Arms at the Joints, rather than cut or break a Bone. In the Case where I was sent for to assist him, he had cut off both Arms, first at the Elbow-Joint, and then at the Shoulders.

Because the Os Uteri was injured, I was obliged to permit the Introduction of the

If People are determined to separate the Arm of a Child from its Body whilst in the Womb, it is done safer for the Mother if the Operator takes hold of the Os Humeri, and twists it off at the Articulation of the Humerus and Scapula; but it ought never to be done at all, especially if the Child be alive.

§ 123. These Instances are sufficient to shew what Injuries may be done, both to the Publick and private Families, by such Practices as these; for, although the Killing this Child might be a Loss, yet it might have happened to a Person in a much higher Station, whose Estate, Title, and Honours might depend upon having a Son; and it might so happen, that the Woman should never be pregnant again. There are also many Husbands, who would lose the Life-Estate upon the Death of their Wives, for Want of having a Child born alive: All which might be lost by these Means; and yet, perhaps, the Operator could not be detected therein by the By-standers, or even by the Midwife, to whom he might tell, that it was an Operation necessary to preserve the Life of the Mother. Hence we see the Necessity of not permitting any Person to make use of Instruments, whereby either Mother or Child may suffer, without

out having a Consultation with some of the Fraternity (when Time will permit.)

Some may think me ungenerous and much to blame in telling this Case at large; but I hope I shall be easily excused for so doing, when I inform the Publick that I do it in my own Justification: For, as I was so generous to the Person first sent for, as not to speak of it, he should not have taken that Advantage of my Silence, and, as soon as my Back was turned, by himself and Sister-Gossips, privately spread it about, that I had done what he really did; so that I am very glad of this Opportunity of doing myself Justice, while Mrs. Dalton, her Midwife, and many of the By-standers, who were present at the Labour, are yet living.

§ 124. The chief Difficulty in delivering a Woman, when an Arm presents, is to put it up, and to keep it so while the Operator turns the Child; and what can be more proper to do both these, than the Instrument I have here contrived, which, from its Resemblance, I call a *Crutch*? *Tab. XVI. Fig. 2. Let. h.* and is to be used in the Manner following, *viz.*

Suppose a Child to lie cross the Mother's Womb, with an Arm presenting; the Operator must introduce a Finger or two into the *Vagina*, to guide and direct the *Crutch*, *Tab. XVI. Fig. 2. Let. h.* under the *Axilla*, and, with the Hand which is without, placed

placed against the Crochet's End. Let a must thrust up the Body of the Child obliquely, gradually, and gently, which is done with very little Pain to the Mother, and much less than when the Hand is within the *Vagina* or Womb, *Tab. XVII. Fig. 14.* During this Time the Operator should keep a Finger within, to guide the Instrument, and to know when the Child is sufficiently moved to prevent the Arm from falling out again in the same Posture, when the Instrument should be taken out; but that must not be done, unless the Operator has sufficiently altered the Position of the Child to prevent the Hand from descending again; because, while the Instrument remains in, he may sometimes get hold of a Foot, and then, withdrawing the Instrument may turn the Child effectually.

By this Method, there is no Danger of injuring either the Mother or Child, and it entirely removes the Causes of this difficult Labour, by both altering the Position of the Child, and consequently drawing the Arm within the Womb again, and this may be done too, while the *Os Uteri* embraces the Arm, so much as not easily to give Room to introduce the Operator's Hand, while the Child is there. By this we find a Child preserved entire by an Instrument, without the least Injury to the Mother; which is very rare. The Operator, before he uses

the Crutch, should search with a Finger, to find if the Child lies a-cross the Womb; for otherwise this Instrument will be of no Service if the Arm and Head come foremost, and if the Buttocks be at the *Fundus Uteri*.

§ 125. One Reason given for cutting off a Child's Arm, as abovementioned, is, because the *Os Uteri* is collapsed so much, as not to permit the Operator either to introduce his Hand or Finger; and, least the Reader thereof should be drawn into a Mistake, I will beg Leave to shew the Difference betwixt the Mouth of the Womb collapsed or contracted, and when it was not sufficiently dilated.

When the Child's Head (which is the largest Part in Circumference) has passed the *Os Uteri*, and then stops, the Mouth of the Womb may be said to collapse or contract about the Neck; because it had been extended farther by the Head, and the Pressure within is at the same Time abated,

§ 45.

But when the Child lies a-cross, and extends from Side to Side of the Womb, it rather pulls up the Orifice of the Womb, than presses it down, as I observed before,

§ 43, 44. wherefore the Mother's Pains have very little Effect upon the *Os Uteri*; and though the Arm might descend down into the *Vagina*, yet there is so little Pres-

sure, that the Mouth of the Womb does not dilate so much as it would otherwise do, if the Head was against it. Wherefore the *Os Uteri* cannot properly be said to collapse on contract about the Arms; for as all the chief Bulk of the Child is still within the Womb, the Contractile Force of the Abdominal Muscles and of the Womb, § 45. can still act with the utmost Efforts; which Force will prevent any Contraction of the *Os Uteri*, if it be once dilated; which is confirmed by Experience; for while that Force remains the same with that which dilated it, the Opening must remain the same; and therefore the Operator must give his Assistance to dilate the Orifice, according to the proper Method in these Cases made use of.

§ 126. We sometimes meet with such Things as Monsters, such as two Children joined together; sometimes a Child has supernumerary Limbs; or, having a right Number, may yet have them preternaturally placed, or differently made from others, as was the Case with the Monster I delivered a Woman of, in January 1749. *Tab. XVII. Fig. 1.* They may also have extraordinary Excrescences on various Parts of the Body, or Extremities, or the like; or may be defective in some Parts, as in the Case last mentioned, and in *Tab. XVII. Fig. 2.* the first wanting the whole Head,

the

the last a great Part of it. In all these Cases the Operator will be able to know what to do, from the foregoing Directions. But I must observe, that most Monsters generally occasion more difficult Labours than Children who have an Hydrocephalus, or an Ascites, because these are remedied by a single Puncture.

I have now mentioned all the chief Operations upon the Child with Instruments, at or near the usual Time of Labour; I come therefore now, in the next Place, to mention those wherein the Woman must be cut.

§ 127. Whenever the Orifice of the Womb has been wounded or lacerated, that Part, where the *Cicatrix* is formed, will not yield or dilate, as the other Parts will do; but yet, as the Impediment is but in one Point, a little Time and proper Application may sometimes bring a safe Delivery; but if it be so large a *Cicatrix*, that the Orifice will not open sufficiently for the Admission of the Fingers, or if the Orifice becomes scirrhus, so as to admit of no Dilatation, then there is no saving either Mother or Child, but by making an Incision through the Part affected, or by performing the *Cæsarean* Operation. The First is attended with much Danger, for, as the

§ 2

Womb

Womb lies between the *Rectum* and *Bladder*, there is no small Danger of wounding one or both Parts, as we cannot see the Part, nor even have the Hands to be our Guide, but in a confined Manner: And, in the latter Case, when the Part is scirrhus, it is very difficult to heal the Wound afterwards. The Manner of performing this Operation is more the Province of a Surgeon to direct, than for me, and therefore I shall not give any Directions about it: Only I shall say, that after the Incision is made, the Operator must immediately introduce his Hand into the Womb, and bring away the Child by the Feet, without waiting for the Mother's Pains; but there is but little Reason to expect the Patient's Recovery, when we consider the bad Disposition of the Womb, and what it now suffers; of which her Friends, in Prudence, should be apprized.

§ 128. Sometimes it happens, that tho' the Head of the Child may pass the *Pelvis*, yet it may be stopt by a Constriction of the external Orifice of the *Vagina*, or of some other Part of the Tube, in which Case, the Child's Head will thrust the *Vagina* and *Integumenta* before it, as if it was contained in a Purse: Wherefore the Operator must endeavour to dilate the *Vagina*, if possible, with the Fingers, and force it over the Child's Head; but if this cannot be accomplished,

plished, then there must be an Incision made towards the *Anus*, after which the whole Body may be brought forth; and then the Wound must be healed in the usual Method.

§ 129. I come, in the next Place, to treat of the *Cæsarean* Operation, in which the Child is, by a careful Section, to be taken from the Womb of its Mother, when it cannot be brought forth in the natural Way. I have already mentioned, § 33. what is to be done, when a Woman dies big with Child.

As there has been so much said for and against this terrible Operation, I shall mention the chief of the Arguments produced by the Advocates for each Opinion; in which I shall chiefly follow Dr. Southwell's Method, as taken from the *Memoirs of the Royal Academy of Surgeons at Paris*.

As there are some Cases, where it is impossible to extract the Child through the *Vagina*, even with Instruments, there is a Necessity of performing this Operation, to have even a Chance, though a dangerous one, of saving the Life of the Mother.

First, When the Mother is alive and the *Fœtus* dead, but incapable of being extracted by the natural Passages: As, *First*, When the *Sacrum* and *Pubis* are by far

too near, like that mentioned by DEVEN-
TER, who says (w), he saw a Skeleton in
London, whose Sacrum and Pubis were but
two Fingers-breadth asunder; a great Part
of which would be filled up with the *Ris-
cera*. Something of the same Nature is
mentioned by MAURICEAU (x).

Secondly, Where the Coalition, Callosity,
or *Schirrus* of the Mouth of the Womb or
Vagina is so large and hard, as to render
the Birth that Way impracticable, even
was there an Incision made in the said
Parts. Many Instances of these Kinds are
to be met with, particularly in VATERUS,
who assures us (y), the *Vagina* was so cal-
lous, from a preceding Ulcer, that it would
not admit the Bigness of a Pea.

Thirdly, When the *Fœtus* is lodged in
the *Ovaria*, as mentioned in the *Philoso-
phical Transactions* (z), in the *Tubæ Fallo-
pianæ* (a), Cavity of the *Abdomen* (b), or
in a Kind of *Hernia* or Bag without it, as

(w) Art. Obstet. (x) Observ. 26. (y) De
Partu Cæsareo, Vitebergæ, Ann. 1695. A&.
Erudit. Lips. Ann. 1693. p. 229. Saviard Chirurg.
Obs. 14. Mauriceau Obs. 76. Hildanus variis loc.
(z) No. 150. p. 285. (a) No. 48. Obs. N.
251. p. 125. item M. N. C. ann. 4. & 5. Hildanus de
Hern. Uterin. Dionis Demonstr. IV. Horne Micro-
techn. (b) Bartholin. Cent. 6. Obs. 92. Rooh-
huys L. II. p. 21. Philos. Trans. No. 139. p. 979.
SENNER-

SENNERTUS (60) and **HARLEANIUS** (61) have described; or, **Lastly**, (when, in the Agony of Labour, the *Fœtus* has burst the Womb, and fallen into the Cavity of the *Abdomen*, § 43. of which we find several Instances in Authors (a). In all these Circumstances, (it is demonstrable) Instruments can be of no Use in the common Way, and consequently the only Means left to save the Mother is the *Cæsarean Section*. The usual Symptoms, which accompany these Cases, are, no Relaxation of the *Uteri*, nor Discharge of the Waters after the Labour-Pains have been felt; the *Fœtus* appears higher up in the *Abdomen*, and its Head, Arms, Legs, &c. may be more perfectly distinguished than usual, by feeling on the Outside of the *Abdomen*, in the last Case; when the Womb bursts, the Labour-Pains immediately cease for a Time, and never return, as usual, § 43.

(c) Instit. Med. Lib. II. part. 1. cap. 9. (d) Epist. de Hernia Uterina. (e) Bartholin. Cent. 6. Obs. 92. Hildan. Cent. 1. Obs. 64. & 67. Cent. 4. Obs. 57. Schenk. Obs. I. IV. Roonhuys. Obs. Chirurg. L. II. Obs. 1. Albin. Dissert. de Part. diff. Bjarium Erudit. Paril. Mens. Junio Ann. 1722. Pistor Dissert. de Fœtu e rupto Utero in Abdomen prodeunte. Viard Chirurg. Obs. 60. (f) Bartholin. Cent. 6. Obs. 92. (g) Bartholin. Cent. 6. Obs. 92. (h) Bartholin. Cent. 6. Obs. 92.

The *second* Case, where the *Cesarian* Operation is necessary, is, when both Mother and Fetus are alive, but no Possibility of Delivery in the natural Way, from some of the Causes abovementioned, but especially from the bad Conformation of the Parts of the Mother, which will always prevent the Operator's introducing his Hand, in order to take hold of the Child's Feet, or to extract it even by Piece-meal.

To abandon a poor Woman to certain Death, in such Circumstances, as MAURICEAU did (f), is a great Piece of Inhumanity, when Delivery is otherwise impracticable, and is certainly unpardonable, according to the old Maxim, 'Quem non servasti, dum potuisti, illum occidisti:'. To neglect to save a Person, when it is in your Power, is to be accessory to his Death: And to decline the Operation, in this Case, is to be accessory to the Death of two Persons.

§ 130. That the Mother sometimes may (if not the Child also) be saved by the Operation, is confirmed both by Reason and Experience. To make this the more evident, I shall consider the Parts which suffer in this Operation which are, First, The Broad Muscles of the Abdomen, the two

Oblique and Transverse Muscles, the *Peritonaeum*; and, Secondly, The Womb.

As to the *First*, Daily Experience convinces us, that Incisions are made as safely in these Muscles and the *Peritonaeum*, as in any other Part of the Body; witness the Operation of the *Hernia*; Abscesses in different Regions of the *Abdomen*; Wounds penetrating into the Belly; the Cutting for the Stone the High Way, where the same Integuments and Bladder are cut; and yet, when managed by a skilful Hand, the Parts unite and do perfectly well. Hence the Objection made by some to this Operation, because of the Danger arising from Wounds of the Belly, must drop. In this Operation here is no Danger of any Effusion of Blood, by cutting these Integuments, because the Operator avoids cutting the strait Muscles, behind which the *Epigastric* and *Mammaria Interna* lie, and there are no other large Blood-Vessels in the Way.

Secondly, The Womb itself has not been exempt from Incisions of this Kind, as we find in several Authors. For, *First*, we find the Womb has been opened by an actual Cautery (g). *Secondly*, Others have had Incisions made on the prominent Part, through which rotten *Fosses*, with their Membranes, were extracted. Thus VIL-

(g) The French Translation of Deventer, p. 354.

was extracted a rotten Child; and in the Year after, the same Woman, who was a Midwife in Jory, was delivered of a Daughter, and in two Years more of a Son, both in the natural Way (l).

It is mentioned in the *Philosophical Transactions* (i), that a Negroe Woman was delivered by this Operation of a dead Child, and proved with Child afterwards. In the *Medical Essays* (k), we are told, that a Farmer's Wife, near Armagh in Ireland, was delivered, in 1726, of a dead Child in the same Manner: Nay, some have had their Wombs totally extirpated upon a Mortification, the Consequence of a *Prolapsus Uteri* neglected, yet have recovered, and lived many Years after (l).

This is sufficient to take off the Objection made by some, That when this Operation is performed, the Patient must bleed to Death; because it is evident this Hemorrhage has nothing so terrifying in it, as they, who have performed this Operation, tell us it is not very considerable (m); for this Incision is made in the Bottom of the Womb,

(h) Schenk, *Obl.* 193. (i) No. 229. p. 580. (j) Vol. V. p. 442. (k) *The French Translation of Dr. Astruc's Medical Cases*, in the Remarks annexed to *Diagnosic Surgery*, p. 136. And the Operation was performed with Success in the *Hôtel-Dieu* in Paris, in 1735.

(m) *Memoirs of the Academy of Surgery in Paris*, p. 644.

which,

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which, by Reason of the Muscular Fibres, discovered by MALVIGNIUS and RUYSCH, is extremely elastic; consequently, these Fibres, like Bandages in re-uniting the Lips of a Wound, must, upon their Contraction, speedily close up the Mouths of their cut Vessels, and by this Means speedily stop the Hemorrhage, especially as the Womb is empty at that Time. But granting it was considerable, yet it can be no more than the Blood then contained in the Vessels and Substance of the Womb, and which is always evacuated, as the *Lochia*, the natural Evacuations after Deliveries; as may be easily made appear by the very Fabric of the Womb, mentioned in § 5. But even this Blood the Operator takes Care to imbibe with his Sponges; and what few Globules remain after the Operation, are evacuated with the *Pur*, when the Patient lies on the Wound (as is usual in all the like Cases) without any Manner of Danger of its corrupting the *Viscera*, as some vainly imagine.

(m) *Roussin* (n), in 1581, has given ten Instances of the happy Success of this Operation: among which, he mentions one very remarkable of a Woman called *Goddard*, that lived in a Village called *Ménil*, near *Paris*, who had suffered the *Cæsarian* Sec-

(m) Memoirs of the Academy of Surgery in Paris.

(n) In *Libell. de Part. Cæs.* in 1582.

tion six Times. She proved with Child a seventh Time, but *Guillot* her Man-Midwife being dead, and finding no other who would attempt the Operation, she died miserably, with her Child.

GASPER BAUHIN (o), a German Physician, assures us he was present, when seven other Women had this Operation performed upon them. The following is very particular: In 1500, one *Elisabeth Alepachin*, Wife to *James Nufer*, in the Village of *Sierghensen*, could not be delivered in the natural Way, after several Days spent in Labour Pains, though she had with her thirteen Midwives and some Surgeons, who used to cut for the Stone; her Husband (a Golder) an illiterate Fellow, and without the least Experience in Surgery, having previously obtained Leave of the Magistrate, the President of *Fravenselden*, and implored the Almighty's Assistance, performed this Operation upon his own Wife, in the Presence of those Surgeons and two of the Midwives (the others he turned out, because they opposed the Operation) and by this Means saved both the Mother and Child. This Child lived to be Seventy seven Years old; the Mother was afterwards delivered of Twins in the natural Way, and of four other Children successively, and lived to be

(o) In Libell. de Part. Caesar, upwards

upwards of Sixty Years old: One of the Twins was Judge of *Sierghenfen*, and was alive in 1583.

In the *Journals des Sçavans* (p), we find Messieurs RALAU and SAVIARD have given several Instances of Women who survived this Operation. Dr. JOBERT (LA MOTTE, cap. 10. calls him POBERT) a Physician at *Chateau-Thierry*, not only confirms SAVIARD'S History, but also gives us another of a Woman who had twice suffered this Operation in twenty Months, and that the first Child lived to be Ten Years old: in the latter Operation, the Mother recovered in two Months.

ROONHUISIUS, a Surgeon of *Amsterdam*, tells us (q), that Dr. SONNIUS, a Physician at *Bruges*, performed this Operation seven Times with Success upon his own Wife, and that the Children all survived.

The celebrated *Olaus Rudbeck*, a Swedish Physician (r), performed it with Success, the Child also surviving.

LA MOTTE (s) has given, among many others, the History of a poor Farmer's Wife, who, after six Days Labour, was delivered of a dead Child by this Operation, in March 1704: When he went to search her, he found the Gut next the Incision mortified,

(p) Ann. 1692, 1693. (q) De Morb. Mulier. cap. 1. (r) Colloq. Menstrua Tenzelli, An. 1689. (s) P. 621, *Isis* de Part. Cap. 1. In Libell. de Part. Cap. 1.

As he says, through the Surgeon's Neglect, and yet the Patient recovered.

M. DE LA PEYRONIE (r), First Surgeon to the French King, relates the Case of a Woman, who had twice undergone this Operation: In the first Operation, she recovered in fifteen Days.

M. NOYER (u), Surgeon, at *Iffertean* in *Auvergne* in *France*, performed it with Success, in April 1726, and the Wound cicatrized in seventeen Days. This Woman proving with Child again, and M. NOYER being out of the Way, she died, with her Child, it being impossible to deliver her in the natural Way.

M. HELVETIUS (x), lately, if not at present, First Physician to the Queen of *France*, communicated the following History to the Royal Academy of Sciences, in 1731: 'A Woman Forty-eight Years old, and pregnant of her first Child, sent for her Midwife, who finding the Head of the Child too big for the Passage, attempted to extract it with a Crochet, the fourth Day of the Woman's Labour, but could not; she at last performed the *Cæsarean* Operation the seventh Day, and the Woman recovered.

(r) *Memoires de l'Acad. Royale de Chirurg. de Paris* p. 641. (u) *Ibid.* (x) *Ibid.*

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M. DE PAGES, Physician at *Sad*, writes (y), That it was performed, in December 1738, with Success upon his Wife; but what is chiefly worth our Notice, is, that it was not attended with the least Hemorrhage, and that his Wife was safely delivered in the natural Way, in December 1740.

M. SOUMAIN (z), Accoucheur at *Paris*, performed it in April 1740, with Success, upon Mrs. *Desmoulins*, a Woman three Feet one Inch tall (*French Measure*) aged Thirty-seven Years, in the Presence of several Physicians and Surgeons; nor was the Hemorrhage here any way considerable; Dr. SOUTHWELL saw this Woman after the Operation.

The Medical Society at *Edinburgh* has published several Instances of its happy Success in the *British Dominions*.

We are told (a) by them, that one *Alice Oneal*, aged about Thirty-three Years, Wife to a poor Farmer near *Chertworth*, and Mother of several Children, in January 1738, fell into Labour, but could not be delivered, though several Women attempted it. She remained in that Condition twelve Days, till *Mary Donnelly*, an illiterate Woman, performed the Ca-

(y) *Mémoire de l'Académie Royale de Chirurgie de Paris*, p. 641. (z) *Ibid* (*). (a) *Medical Essays*, Vol. V. p. 439.

• *Caesarean* Operation with a Razor; at the
 • Aperture she took out the Infant and Se-
 • cundines, and held the Lips of the
 • Wound together, till one went a Mile for
 • Silk and common Needles, with which
 • she stitched the Wound, and dressed it
 • with the Whites of Eggs; the Cure was
 • compleated with Salves of the Midwife's
 • own Compounding; in about twenty-
 • seven Days, the Patient walked a Mile on
 • Foot, and came to see me; she frequently
 • walks to Market to this Town, which is
 • six Miles distant from her House.

Dr. KING, of *Armagh* (b), mentions
 another Case of the same Nature, attended
 also with good Success.

At *Paris*, the *Caesarean* Operation was
 performed in 1740, on a little gibbous Wo-
 man; she recovered of the Operation, but
 the Child died soon after (c).

Since, therefore, both Reason and re-
 peated Experience confirm the Possibility of
 Success in this Operation, nothing should
 deter a skilful Operator from performing it,
 when it is absolutely necessary; and that
 That does happen, is unanimously agreed,
 as we see above.

§ 131. Every Thing being ready (d),
 such as Instruments, Lint, Compress, &c.

(b) *Med. Ess.* Vol. V. p. 441. (c) *Astruc*, on
 the Diseases of Women, p. 6. Chap. 1. in the Notes.

(d) See *Heister's Surgery*, Part ii. Sect. 5.

and

and the Patient being held by four Persons strong enough, the Operator must make a longitudinal Incision on the Outside of the Rectus Muscle, between the Navel and Angle of the Os Ilium, the Skin and Membrana Adiposa are to be divided for the Space of about eight or ten Fingers Breadth, passing afterwards through the Oblique and Transverse Muscles, and then carefully thro' the Peritonæum, in which a small Puncture must be first made, and farther divided by an Incision-Knife that has an obtuse Point, or a Pair of Scissars, till the Opening appears large enough to extract the Fetus; this done, the Operator must search where the Child is lodged; and if it be lodged without side of the Uterus, in the Cavity of the Abdomen, it should be immediately extracted, together with its After-birth; but if it be contained in the Fallopian Tube, or in the Ovary, those Parts are to be opened, and the Fetus with its Placenta removed; but if it be within the Uterus, that must be opened by making a longitudinal Incision, sufficient to give a Passage to the Child and its Appendages, and after they are removed, the extravasated Blood is to be taken away by Sponges made warm in Water, and the Uterus will soon contract itself, and the wounded Parts will

unite again (e). The Wound in the *Abdomen* is to be joined together by two or three Sutures, as is usual in the like Cases, in such Wounds.

PLATE XVII. Explained.

Fig. 1. represents a Monster, born without a Head, of which I delivered a Woman in this City (York), in January 1749, in a View, where Part of the Back and right Side are shewn, with one Hand and Foot, exactly drawn from Nature; the other Hand appearing as in *Fig. 2.* which is nearly of the same Size as here shewn. The Thighs were twisted upwards; and the Feet were placed flat against the Hips, with the Knees where the Buttocks should be.

Fig. 3. represents all the Bowels of this Monster in their full Dimensions.

Fig. 4. represents an Excrescence, that grew from the Inside of Part of the Neck of the Womb, as is mentioned in its proper Place.

Fig. 5. is the Side-View of Part of a Child's Head that was born in this City, wanting the upper Part, as here represented.

(e) Bartholin. Cent. 6. Obs. 92. Roonhuyf, Obs. Chir. Lib. 2. pag. 31. Solingen. Chirurg. pag. 776. Vander Wiel, pag. 2. Obs. 3. Mauriceau, Obs. 251. Act. Acad. Natur. Curios. Vol. II. Obs. 176.

all

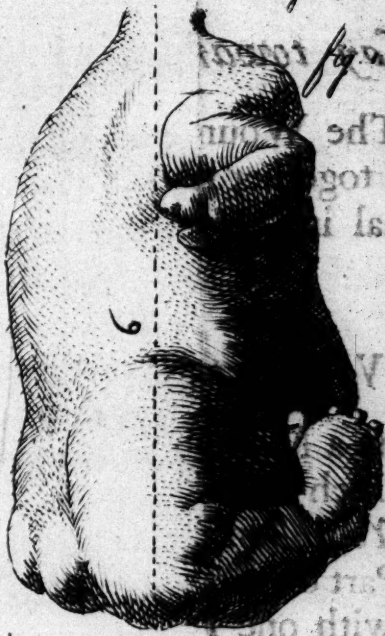


fig. 5.



fig. 19.

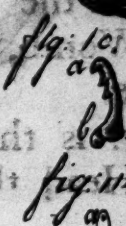
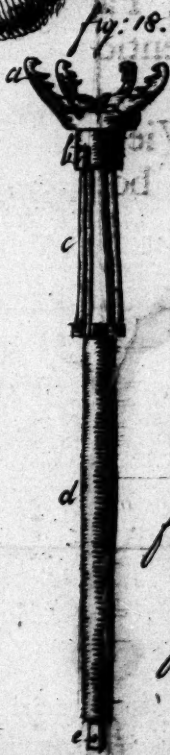
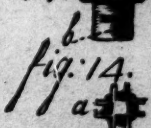


fig. 8.



all the other Parts of the Child being perfect.

Fig. 6, 7, 8, and 9. shew the component Parts of the Author's new Extractor.

Fig. 6. represents the Extractor when out of the *Canula*, with its Wings extended, the whole Length being thirteen Inches.

a, is the Piercer, near one Inch in Length, and in the broadest Part $\frac{1}{4}$ of an Inch, being very sharp both at the Edges and Point.

b, The Joints, by which the Wings, *c*, are fixed to the Staff.

c, The Wings, which are each about an Inch, or an Inch and a Quarter in Length.

d, The Joint by which the Steel Slider, *f*, is fixed to the Wings, so as to extend, or bring them close to the Staff.

e, e, Two hollow Pieces, which are screwed into the Staff to guide the Slider and to keep it steady; the upper of which should be placed as near the Wings, as possible to be kept within the *Canula*, when used.

f, The Steel Slider or Forcer, which reaches from the Wings into the Handle, *h*, and is made to slide very easily.

g, is a Screw, that is fixed on the End of the Slider, which is bent at the End for that Purpose.

h, The Handle.

i, k, l, Three Holes in the Staff, for the

Screw, Fig. 9. according to the different Uses.

1, The Hole in which the Screw, Fig. 9. is to be put through the Groove, *b*, in the Canula, as in Fig. 7. when only the Piercer is to pass the End of the Canula, *a*, Fig. 7.

k, The Hole in which the Screw is to be put, through the Groove in the Canula, when the Wings are likewise to pass the End of the Canula, as in Fig. 8.

l, The Hole in which the Screw is to be fixed, through the Hole, *c*, in the Canula, to prevent the Instrument from hurting the Person in carrying it: But this Hole, *l*, in the Staff may be omitted, as the Hole, *k*, will answer the same Purpose, when the Screw is put through the Hole, *c*, in the Canula, Fig. 7.

N. B. The Maker must take Care, that the End of the Slider in the Handle, at *g*, be placed on the left Side when the Slider faces him, as this Figure 6. does. He must also have a Space of about $\frac{1}{10}$ of an Inch, betwixt the Ends of the Wings when close to the Staff, as in Fig. 8. and the End of the Canula, *a*, Fig. 7. and the Staff must be broad enough to fill the Tube, especially towards both Ends; the Breadth of this Staff is three Quarters of an Inch, and about $\frac{1}{10}$ of an Inch thick.

Fig.

Fig. 8. represents the Extractor complete, before the Wings are extended, as in *Fig. 6.*

Fig. 9. is a Screw to fix in the Holes *i, k, l,* *Fig. 6.*

From *Fig. 10.* to *Fig. 18.* inclusive, are shewn the different component Parts of the Instrument, as inclosed in the Tube, in *Fig. 19.*

Fig. 10. represents one of the four Claws or Wings, as in *Fig. 18, 19.* Let *a.* from the End, *a,* to the Hole, *c,* being in Length one Inch $\frac{4}{5}$. From the Hole, *c,* to the Hole, *b,* being $\frac{1}{5}$ and one half, but must be in Proportion to the Diameter of *Fig. 13.* *a,* is the hooked End.

b, The Part to which *Fig. 11.* Let *a,* is fixed.

c, The Part which is fixed in *Fig. 12.* Let *a.*

Fig. 11. represents one of the four smaller Staves, shewn in *Fig. 18.* Let *c;* the End, *a,* being fixed to *Fig. 10.* at Let *b;* the other End, *b,* being fixed to the greater Staff, *Fig. 15.* Let *a.* *Fig. 14.* Let *a.* The Length of this Part is three Inches $\frac{1}{2}$.

Fig. 12. is the Top-View of *Fig. 13,* *Fig. 18.* Let *b;* in which the four Claws, *Fig. 10.* are fixed in the four Niches, as at *a;* which are cut obliquely descending from the outward Part, *a,* towards the Center, *b;* in which Opening, *b,* the four Staves,

Fig. 18. Let. c. Fig. 11. move. The extreme Diameter of this, at the Rim, from the Outside, is one Inch; the Diameter of the Opening, *b*, *Fig. 12, 13.* is exactly of an Inch.

Fig. 13. is the Side View of *Fig. 12.* where two of the Niches are very visible; *b*, is a Nich, in which a Pin goes that is fixed in the Tube, *b*, *Fig. 19.* as a Bayonet is fixed at the End of a Musket; but with this Difference, that this goes within the Barrel, as in *Fig. 19. Let. a.*

Fig. 14. shews the Top View of the End of the great Staff, *Fig. 15. Let. a.* *a*, shews one of the four Niches for the End of the short Staff, *Fig. 11. Let. b.*

Fig. 15. represents the great Staff.

a, The Head or Side View of *Fig. 14.*

b, The main Body, near half an Inch Diameter.

c, The End on which is fixed *Fig. 16.* with a Screw, as is seen in *Fig. 19. Let. d.*

Fig. 16. shews the Handle, as in *Fig. 19.* with the square Hole in which the End of the Staff, *Fig. 15. Let. c.* is put.

Fig. 17. represents a round Piece of Steel, in which is a Hole just large enough to admit the main or great Staff, *Fig. 15.* This Ring is fixed at the End of the Barrel or Tube, *Fig. 19.* at *Let. d*, by which the Staff is kept steady in its Motions.

Fig.

Fig. 18. represents Fig. 10, 11, 13, and 15 as put together, with the Claws open; whole Ends, *a*, are then full three Inches, from Outside to Outside; and the Staff moves but $\frac{1}{10}$ of an Inch in the Barrel, Fig. 10, when it extends the Claws thus far.

Fig. 10 represents the whole instrument as fit for use.

4. The Clays, which, when thus closed, are only one Inch Diameter; and the Inside of the Tube b , is that of $\frac{1}{2}$ Inch Diameter.

c. is a Screw, to fix the Wings or Claws to any certain Degree of Extension, when used as an Extensor of the Mouth of the Womb.

Having gone through all Kinds of Births about the usual Time of Labour, I come, in the next Place, to treat of *Abortions*.

The End of the Third Part.

Part. they serve: so that the Uterus may
 receive a much greater Quantity of Blood

in a given Time, than any other Part, as is
 evident in violent Floodings; and the Mo-

menstrual Blood being made up of its
 own, and of an influx of Blood from the

Arteries, and the Cervix, whatever increases
 either of these, for a continued Time,

will increase that Force, on which the
 Menstruation depends.

Hence it is, that violent Floodings of either
 the Arteries, or the Cervix, are attended with

Boils, and other Disorders, which are
 attended with much Pain, and sometimes

by forcing the Blood out of the Sinuses
 thro' the Orifices opening into the Womb,

to say, certain Disorders, which are
 attended with much Pain, and sometimes

whence Floodings, &c. some Kind of Vo-

mitage, indeed may be of this Kind, or
 attended with much Pain, and sometimes

about the Time of the Menstruation, or
 there will be less Chyle sent into the Blood

Vessels, &c. attended with much Pain, and
 attended and full; whence we are taught to

§ 132. **B** *Abortion, or Miscarriage,*
 is meant the Bringing a Fetus

forth before the Time designed by Nature
 for its Perfection, from what Cause soever

it may proceed, but so that the Fetus should be
 observed before it is born.

§ 133. **T** *That Providence*
 has made the Hypogastric and Spermatic

Arteries, that serve the Womb, larger in
 respect of its, than any other of the Arteries

of the Body, in respect to the Bulk of those
 Parts.

Parts they serve; so that the *Uterus* may receive a much greater Quantity of Blood, in a given Time, than any other Part, as is evident in violent Floodings; and the *Momentum* of the Blood being made up of its Quantity and Celerity, whatever increases either of them, for any continued Time, will increase that Force on which the Distention of the Vessels, or the Flux depends: Hence Fevers, violent Agitations of either Body or Mind, Coughs, a Plethora, Vomitings, or the like, may occasion Abortion, by forcing the Blood out of the Sinuses thro' the Orifices opening into the Womb, § 7. 8. betwixt it and the *Placenta*, and thereby separate it, either wholly or in Part; whence Floodings, &c. Some Kind of Vomitings, indeed, may be of Use; for, by evacuating Part of the Food this Way, there will be less Chyle sent into the Blood-Vessels, which therefore will not be so distended and full; whence we are taught to remove or mitigate such Symptoms, when they become violent and dangerous, by proper Evacuations.

§ 133. I likewise observed, § 26, 27, 28, That the *Fetus* absorbs or sucks up some of the Mother's Humours through the Vessels of the *Placenta*; whence it may be infected, if the Juices of the Mother be vitiated, and become thereby so weak, that it can scarce absorb any Juices at all; and then

then the *Placenta* will easily separate from the *Uterus*, § 23. Hence too thin and sharp Humours, as well as too weak and lax a Habit of Body, may cause a Miscarriage. § 134. I took Notice, § 132. That whatever brings too much Blood to the Womb, and stimulates the adjacent Parts, may occasion Abortion; hence Cholera, Diarrhoea, Stranguries, Tenesmus, or any thing that stimulates and brings the Humours to the Parts of Generation; whence, in some Constitutions, Coition (altho' the Woman be generally more desirous of it, the first two or three Months of Pregnancy) is bad (especially if the Woman menstruates during her being with Child) as also Inflammations and Tumors in those Parts; and every thing whatsoever, which may separate the *Placenta*, wholly or in Part, from the Womb; such as Blows, Falls, a monstrous Child, too short Umbilical Chord, § 58. No. 9. or the like. For these Reasons, if there be a Necessity of purging a Woman with Child, a little Blood should be first taken away, to prevent Abortion. The same should be done a little before she goes a Journey. Hence we see, in Inflammations of the *Uterus*, Cathartics should be avoided. § 135. Whoever will consider, that the Vessels of the Womb and of the *Placenta* do not anastomose, as I shew'd before, § 8, 9,

8. 9. 18. 20. 31. and that Women are erect, and are subject to periodical Evacuations from the *Uterus*, which has larger Canals opening into it, than are to be observed in other Animals, may soon see the Reason why Women are more subject to Abortions, than the Females of other Creatures are: For the Contents of the impregnated human *Uterus* press more on the Orifice of the Womb to force it open; which yet may, perhaps, be relaxed with the *Fluxus Albus*; and at the same Time, the superfluous Quantity, evacuated periodically at other Times, is apt to thrust off the *Placenta*, and, being poured into the Cavity of the Womb, either there corrupts, or forces open the *Os Uteri*; both which may occasion the Loss of the *Fetus*: Hence we see one Reason, why Women more rarely conceive immediately before the *Menses* flow, than soon after the Evacuation is over.

Nature seems to provide against these Inconveniences, by making the *Placenta* to adhere sooner to the human *Uterus*, than is ordinary in other Creatures; and by furnishing the human *Fetus* with a larger proportional *Placental* *Tied* *VIII. Fig. 13.* whereby the Adhesion is stronger, and on both Accounts the Evacuation is prevented.

§ 136. When there is the largest Quantity of the superfluous Liquors collected, the strongest Push must be given to separate the

the *Placenta*, § 135. from the Womb; therefore, as the *Menses* are generally stopt after Pregnancy, and as the Child is too small for some Months to consume them, Women are most exposed to Abortions in the third or fourth Month of Pregnancy: And as we also see what Disorders are brought frequently on Women, at each Period, when their *Menses* are about to flow, and what Mischiefs almost constantly attend their Obstructions, we need not be surpris'd at the Faintings, Nausea's, Reaching to vomit, &c. that so often attack Women in their first Months of Pregnancy. Hence we see, in such Constitutions where Bleeding is necessary, the properest Time is just before the usual Time of the *Menses* breaking forth.

§ 137. It will be proper, in the next Place, to know what Discharge of Blood, during Pregnancy, is dangerous, and what safe.

Whatever may be the Procatartic, the immediate Cause of Abortion is the Separation of the *Placenta*, either wholly or in Part, from the *Fundus Uteri*, whence a great Flux of Blood must ensue: But we must not always conclude, that there is Danger of an Abortion, because there is a Discharge of Blood in Pregnancy, for that often happens without any bad Consequences; therefore it is necessary to distinguish,

guish, as nearly as we can, between the Discharge that is, and that which is not dangerous. It is well known by Experience, that the Menstrual Discharge sometimes continues in its usual Regularity for two or three Months after Conception, without any dangerous Consequences; which may be easily accounted for, from the Description I have given of the Vessels of the *Vagina* and *Uterus*, § 4, and 11. for they have Part of their Arteries from the same Trunk; and then there are frequently Inosculations of the Spermatic Arteries, that serve the Womb, and the Hypogastric, that serve the Womb and *Vagina*; therefore, when those of the Womb are obstructed (as is the Case some Time after Conception) those Discharges, when they happen, more probably force their Way through those Branches supplying the *Vagina*; and are without Danger when they come at the usual Monthly Period, which I have known to continue to return till the seventh Month; but then they decreased in Quantity each Time, as the *Fætus* increased in Bulk, being attended with no bad Symptoms; but in this Case, the Children are commonly very weakly, not occasioned by the Discharge, but because they could not absorb a sufficient Quantity.

On the

On the other Hand, if this Discharge happens out of the regular Period, attended with Pain coming from the Uterus, and forcing downwards, with Pains near the *Fundus Uteri*; a dull heavy Pain in the internal Thighs, *Sacrum* and *Os Pubis*, with a frequent Motion to go to Stool, and slight Shiverings; especially after any great Emotions of Body or Mind, in some of the foregoing Cases, § 132, 133, 134. or if the Person has took Medicines improperly— if the Waters come out with the Blood;— if the Belly, from being eminent and pointed about the Navel, becomes flat and depressed;— if her Breasts, from being full and plump, become loose and flabby, § 150.— if the Infant be motionless, and the Patient, at the same Time, seems sensible of a heavy, dead Weight, which falls from one Side to the other, as she turns in Bed; then there is Reason to be certain that Abortion will happen. In which Case, there is no Means left, but to extract the Contents of the Womb as soon as may prudently be done, in any Time of Pregnancy.

§ 138. Since the Separation of the *Placenta* from the Womb must inevitably produce Abortion; and since this is occasioned by such very different Causes, operating in various Manners, and requiring different Methods of Treatment to prevent the Loss of the *Fœtus*, as appears from what has been

has been said, from § 132 to 137, inclusive, I shall recapitulate a few general Causes with the proper Method of Treatment; which I cannot do better, than in the Words of the Learned MONRO :

First. Whatever occasions too great a Quantity of Blood to be sent to the *Uterus*, or affluents, or increases its *Momentum* to thrust off the *Placenta*, § 132. such as plentiful Living, Compression of other large Vessels, Frights, violent Exercise, Shocks of the Body, Fevers, &c. will bring on an Abortion. The Cure of this is plainly pointed out, viz. Bleeding, mild Food in small Quantities, Rest, &c.

§ 139. *Secondly.* When the Adhesion of the *Placenta* to the Womb is too weak, from whatever Cause, § 25, 133. and the *O: Uteri* does not make a sufficient Resistance to its own Dilatation, as in the *Fluor Albus*, § 135. whether these depend on the ordinary, general Constitution of the Body, § 133. or on a particular Disposition of the Womb, or on a sudden Relaxation, as in Fainting, § 62, 136. the same Effects will follow : But then the Method of Cure must be very different from the foregoing : for here we must rely on Corroborants, &c. and though much Exercise is at first to be avoided, yet, if the Patient can by Degrees be brought to bear moderate Exercise, it will assist the other Medicines considerably.

§ 140.

§ 140. *Thirdly*, If the Sinuses, § 8, 9, 24, 25, 26, 27, 28, and 29. of the Womb are allowed suddenly to collapse, by the Want of a sufficient Quantity of Liquors to distend them, as by the necessary Supplies to the Blood being with-held, § 142. or by violent Evacuations, especially the Loss of Blood, § 29, 30. then not only the Weakness mentioned, § 139. may follow, but the Vessels of the *Placenta*, which have not been proportionably emptied, will be disengaged from the Excretories of the Sinuses, § 8, 9. by their being deprived of a sufficient Space to lodge in; and therefore Abortion must follow. In this Case, we are not to apply smart Stimulants to move the languid Mother too hastily, for such Medicines increase the Contraction of the Vessels of the *Uterus*, and will drive off the *Placenta* soon; but we ought rather to repair the Quantity of her Blood by mild, balmy Food, with a Mixture of the least irritating Cordials, § 138..

§ 141. *Fourthly*, All Causes that produce a strong Contraction of the Fibres of the *Uterus*, or of the Parts that can press upon it, *e. g.* of the Diaphragm and Abdominal Muscles, § 40, 45. will be in Danger of forcing away the *Placenta*, and of opening the Os *Uteri*, whereby Abortion is occasioned, § 55. Therefore sharp Pains and Purges, Tenesmus, Strangury, Piles, irritating

tating Clysters, or such like, may produce a Miscarriage. The Radical Cure is certainly to remove the Cause of the Pain or Irritation, which must be done by Medicines adapted to its particular Nature and Seat, which are too numerous to be particularly specified here, but yet what a Person of proper Skill and Judgment, by the Directions herein given, may soon know how to apply. If the Cause cannot be removed so soon as desired, we must lessen its bad Consequences as much as possible, by blunting its Violence and counteracting its Effects. The first of these Indications will principally and most speedily be pursued in most Cases (except, perhaps, in the Inflammatory ones) by giving Opiates. The second Intention is answered by diminishing the *Momentum* of the Blood, which Venæsection generally does, and is always useful in Inflammatory Cases, altho' it is not so proper in some other Circumstances, where, however, Opiates generally answer our Intentions.

§ 142. We are not only to consider when Bleeding is necessary, but also where to take the Blood from, both in the Cases abovementioned, and in Obstructions of the *Menses*.

Whatever Cause takes off the Action of the Liquors from the Sides of the Vessels, will give them an Opportunity to recover themselves; and if, upon any Occasion, the

U

Blood

Blood that supports the Vessels, after they are forced to any Degree of Distention, be not seconded, then the Vessels will recover themselves by forcing back the Blood to the Place where it is supposed to have less Resistance; which is the Case when Blood is let from an opposite Part of the Body; wherefore, in all Inflammations of the Womb, Blood should be taken from the Arm. Hence we see the Reason for Bleeding, in the above Cases, to prevent Abortion; and a Caution not to bleed, in some Cases, near the Time of the Eruption of the *Menses*, in Women not pregnant; and why, in the *first* Case, we should take Blood from the Arm, and, in the *last*, from the Feet: But yet this may sometimes be improper also, by preventing or stopping the Flux at the Crisis; by making the Blood in the Arteries and Veins press too much upon the Emissaries of the Womb; in which Case, the only Thing that can procure a Passage for it, is to take Blood from the Arm, to make a Revulsion. To this Pressure upon the Emissaries, Plethoric Bodies are most of all subject, their Veins being still overloaded with Blood, which hinders the Progress of the Arterious Blood; if a Vein, therefore, be opened in such Persons Feet, this Force upon the Emissaries will be augmented still the more.

I ob-

I observed before, § 132. that the *Momentum* of the Blood at the Womb is made up of its Quantity and Celerity; whatever, therefore, diminishes either of them, for any continued Time, will lessen that Force on which the Distention of the Vessels, or Flux depends, & *vice versa*; and consequently, if these be different in different People, *cæteris paribus*, then various and opposite Methods are to be taken to remove the same Complaint; which shews what a Multitude of Cases may hence ensue.

§ 143. From § 132, to 142. inclusive, we see, Abortion may often be prevented by timely Application to a skilful Person; and as so few Pretenders to *Midwifry* are properly qualified for such an Undertaking, either through Want of Capacity, or Want of Education, I could wish, for the Sake of the Fair-Sex, that Physicians would apply themselves a little more to that Practice; because it so often happens, in bad Cases, that their Assistance is wanted before another Person can be found; whereby both Woman and Child frequently perish.

From what has been said, from § 132. to this Place, it is evident why, the more sudden the Abortion is, the greater is the Danger; and consequently, that Women, who voluntarily bring on Abortion by Violence, are in more Danger, than where it

comes gradually and involuntarily ; and also, why an Abortion is more dangerous in the sixth, seventh, and eighth Month ; and why the *Placenta* in Abortion is more difficult to be got than at full Time, § 55. and the more sudden the Miscarriage is, the greater is the Difficulty. Hence also we see, that they who generally miscarry at stated Times, either have a very hard, thick, strait Womb (whether from a Scirrhus, or other Cause) that will not extend sufficiently, § 145. or else a very thin, lax Womb, that yields too easily to the Pressure of the Burthen within, § 146. and also why they of a feeble, lax State miscarry with less Danger, than those of a more firm Texture.

§ 144. From § 132, to § 142. inclusive, we see what various Causes there are to bring on Abortions ; many of which, by a proper and judicious Person, may be removed, and the Woman may afterwards bring forth at her due Time : To have specified each particular Cause, with the Method to remove it, would fill up Volumes.

Although the Patient, in most of the Complaints abovementioned, may have Relief, there are yet other Causes of Abortion, wherein little (if any) Relief can be given : Good Judgment, therefore, is requisite to find out which Cause may be removed, and by what Means ; and which will admit of no Removal ; otherwise we may put the Patient

Patient to great Expence in Medicines and Attendance; which, instead of removing the Cause of Complaint, may bring on some as bad, if not worse Disorder, or, perhaps, may increase the Danger. Therefore, whenever a Person is consulted by one who has had frequent Abortions, he should consider what I have already mentioned, from § 132, to 144. and then inquire, whether the Patient miscarries at a regular certain Time; and if so, whether the Cause be in some Defect in the Mother, in the *Fœtus*, or in the After-birth: If it be in the first, then to consider, whether the Womb be too rigid, hard, or scirrhus; or whether it be too lax and feeble.

§ 145. When the Womb is scirrhus in any Part, it will only admit of a certain Degree of Extension; and then the Woman must either part with her Burthen, or the Womb will burst; and then the *Fœtus* will (either in Part, or wholly) go out of the Fissure amongst the Intestines, as was the Case with the Broker's Wife, mentioned in § 43. *Obs.* VII. Whoever wants to see more Cases of the like Kind, may consult SCHURIGIUS (a), HILDANUS (b), ROONHUSIUS (c), MAURICEAU (d), STALPART

(a) Embryolog. Sect. 3. cap. 3, § 4, 5, 6, 7. Sect. 6. cap. 5. § 1. (b) *Obs. Chirurg.* Cent. I. *Obs.* 64, 67. Cent. IV. *Obs.* 57. Epist. 12. (c) *Obs. Chirurg.* Lib. ii. *Obs.* 1. (d) *Obs.* 251.

VANDER WIEL (*e*), SOLINGIUS (*f*), SALMUTH (*g*), GUILLEMEAU (*h*), HORSTIUS (*i*), VESLINGIUS (*k*), RUYGERUS (*l*), and many Others.

If a Woman, who miscarries at a certain Time of Pregnancy, has (when not with Child) a Sensation of a dead Weight in her Body, and a Difficulty of lying on the well Side, attended with any little Hardness, and sometimes with, or even without Pains, with or without a Running from the Womb; sometimes with an unequal *Ostina*, and sometimes with an Incontinence of Urine, there is Reason to fear a Scirrhus in some Part of the *Uterus*; in which Case nothing can be done towards a Cure; and therefore it is better not to torment the Patient, lest we change these *Scirrhi* into Cancers; which they are too much inclined to do of themselves: Purges given in this Case do Harm, § 134, 141. If the Child or *Fœtus*, therefore, be born alive, and the Patient miscarry at a stated Time, with the Symptoms as above, the Fault is certainly in the Womb.

(*e*) Obs. Rar. Cent. prior, Obs. 66. Cent. poster. Obs. 30. (*f*) Art. Obstet. p. 56. (*g*) Obs. Medic. Centur. I. Obs. 16. (*h*) Art. Obstetric. (*i*) Ope. Tom. II. Lib. ii. Obs. 15. (*k*) Observ. Anat. No. 45. (*l*) M. N. C. Dec. I. An. 8. Obs. 60. & sequent.

When

When the *Uterus* is too rigid or hard, it is easy to conceive, that it will not yield or extend sufficiently, and therefore must press the *Fœtus* strongly against the *Os Uteri*, and thereby occasion Abortion, § 152. In this Case, very little if any thing can be done towards a Cure, because we cannot apply Topical Medicines to the Part; and other Medicines, to alter the Constitution in general, will prove not only tedious but uncertain, and often pernicious, § 144.

We must not always, however, look upon that as an Abortion, because the Mother regularly brings forth a living Child at a certain Time of Pregnancy, before the Term of nine Months be expired; for although, generally, Women carry their Burthen full nine Months, yet there are particular Exceptions, where Women regularly bring forth at the End of eight Months, who in all Probability were right in their Calculations: An Instance of this Kind is mentioned by SCHURIGIUS (*m*), who says, *Matrona quædam, multorum liberorum adhuc viventium mater, quæ nullum unquam infantem ad mensis noni finem in utero gestavit, sed omnes post trigesimam sextam hebdomadem sanos & perfectos, licet non adeo longos, in lucem exclusit, quod fortasse, quia ipsa mater vix medio-*

(*m*) Embryolog. Sect. 4. cap. 1. § 10.

‘cris est staturæ, ab uteri angustia deduci
 ‘posset.’ Many other Proofs of the like
 Nature may be produced here and else-
 where, especially among the *Germans*, as
 is above quoted, some of whom always
 bring forth in the eighth Month; and LA
 MOTTE (n) mentions two or three Persons;
 who always brought forth at the seventh
 Month’s End; whose Daughters always did
 the same.

Although these are generally the Cases
 wherein Women miscarry at stated Times,
 in which no Remedy can be given; yet it
 does not follow, that in all Cases, where
 the Woman miscarries in the same Month
 of Pregnancy, no Relief can be had; be-
 cause the following Case is a sufficient Proof
 to the contrary;

OBSERVATION XXIII.

A Person now living in this City (*York*)
 having miscarried seven Times, as near as
 she could tell in the latter End of the third,
 or Beginning of the fourth Month, sent for
 me in 1741, when she expected to mis-
 carry, having the usual Complaints which
 had preceded and attended her former Ab-
 ortions; and it being about the Time she
 was wont to miscarry, I asked all the ne-
 cessary

cessary Questions heretofore laid down, § 144. but could get very little Satisfaction from either the Patient or Midwife, relating to the *Fœtus*, or Secundines of former Abortions, but flattered myself there was no Scirrhus in the Womb, as she had not the usual concomitant Symptoms. As I found she must inevitably miscarry again, I ordered them to preserve whatever came from the *Uterus*, if the Abortion should happen during my Absence, and to let me know directly: It was accordingly preserved, and I found in it as sound a *Fœtus* as well as could be perceived in that State; and there seemed also to be no Manner of Defect in the Secundines; wherefore I concluded the Cause must be in the Mother's Form or Constitution. She was a healthy, but not robust Woman; her Complexion rather pale and fair, than sanguine; and her Arteries were small, with a feeble Pulse, even in her best State of Health. She soon recovered after this Abortion, when I desired her to let me know, whenever she suspected she was again pregnant, that I might try to prevent a Miscarriage; I then ordered a Medicine, composed of gentle Corroborants with Stomachics, which agreed very well with her, and she regained her lost Appetite and Strength. Some Time after this she sent for me, having not had her *Menses* at the usual Time; her Pulse was then feeble, and she

she had not the usual Uneasinesses from the Obstruction, nor yet any Symptoms that usually attended the Eruption of the *Menses*; wherefore I only ordered her to continue in the Method as above, and watched her very diligently: About a Week before the Time the *Menses* should appear again, she began to have Complaints that used to precede their Eruption; wherefore I ordered six Ounces of Blood only to be taken from the Arm, and gave her a gentle Opiate at Night; this I repeated in six Days, she still taking the Medicines as before. A Week before the third Month, I ordered about four or five Ounces more of Blood to be taken; and the third or fourth Day after, to take four Ounces more; and again on the fourth Day to be repeated; and each Night after Bleeding she took the Opiate; so that in about nine Days she only lost twelve or thirteen Ounces of Blood. The Week before the fourth Month, she lost four Ounces more from the Arm; she still continuing the Medicines as prescribed, till she entered the sixth Month of Pregnancy, without any other Bleeding; and then went on to her full Time, and brought forth a living Child. After the first Miscarriage, she had been blooded every Time she was pregnant; but then they took twelve Ounces at a Time, without considering that her feeble Pulse would not bear the Loss of such a Quantity,

tity, § 140, 142. neither had they considered to open a Vein at the proper Time, § 142. SCHURIGIUS * mentions a Person who miscarried eleven Times; yet, by *proper Bleeding*, in her next Pregnancy, she brought forth a living Child.

§ 146. When the *Uterus* is in too lax a State, occasioned by long and great Discharges of the *Fluor Albus*; from the *Os Uteri* being over-stretched, and kept a long Time distended in former Labours, or from any other Cause, it is evident, if any Pressure is made against the *Os Uteri* from within the Womb, it must yield thereto and open, § 152. and thereby permit the *Ovum* or Embryo to slip out. This is a Complaint very frequently occasioned by the Midwife's permitting the Child to stay too long in the Passage, as happened in the following Case:

OBSERVATION XXIV.

In the Year 1738, I was called in to assist a Person in this City (*York*), who had been in Labour two Days; she had had a Child or more before this Time at the full Term of nine Months: She had (till this Time) been an healthy Woman, though not very robust and strong; had enjoyed as

* Embryolog. Sect. 5. cap. 3. § 2.

good a State of Health as most People, during her whole Pregnancy. At her Falling into Labour, every thing went on at first very well; the Waters broke, the Pains were proper, and the Head of the Child advanced, but the Shoulders were very large, as I found at my Arrival; they had actually, in Part, entered the *Os Uteri*, where they stuck near thirty Hours, before the Midwife could be prevailed upon to have any other Person called in; alledging that there was no Danger, because the Patient did not flood; in Proof of which, she took Cloths from the Woman, to shew the Company that no Blood appeared: In this obstinate Way the Midwife remained, till the Patient began to faint, to have cold clammy Sweats, and, in short, the usual Symptoms of a Woman's Flooding to Death; which frightened the Patient's Friends, and I was then sent for: I told them they had deferred sending too long, for the Woman was bleeding to Death, although none of it got out to stain the Linnen, for the Child entirely filled the *Os Uteri*, that no Blood could pass: I delivered the Woman immediately, and such a Quantity of Blood was collected within the Womb, that I was amazed the Woman was alive; for I brought away a great many Clots of Blood bigger than my Fist: Having cleared the Womb, and having done every thing necessary

tary for the Woman, I left her; and she recovered, though but slowly. The Child was alive some Time in the Passage, but was dead before I went. Some Years afterwards I was sent for again to this same Patient, she having miscarried several Times, and never exceeded three Months of Pregnancy. She told me she had had the *Fluor Albus* very much, ever since her Lying-in of that Child in 1738, and had been subject to great Weaknesses; I examined her, and found the *Os Uteri* open enough to admit my Thumb, although she had not been with Child for three Months before. I prescribed the usual Method in the *Fluor Albus*, along with warm restraining Injections, and searched her again about a Fortnight after, when the *Os Uteri* was closer; but yet would admit the End of my little Finger, and would extend with a very small Force: The Patient followed my *Regimen* for two Months longer, when, becoming pregnant, she sent for me, to know if she must continue the Method I had prescribed; I made such Alterations as I thought necessary, and she went on to the fifth Month, when she miscarried again. After which, she resolutely repeated what I had before ordered, along with Cold Bathing, and, becoming pregnant, went on to her seventh Month, and then again miscarried; which she has twice done in the same Month, and never could

could be brought to her full Time for Labour: I examined her frequently during the Times of Pregnancy, and in the Intervals also, but never once found the *O. Uteri* quite close; and always very easy to be extended.

I have met with several Cases nearly the same as this; which sufficiently convinces me, that many of the Misfortunes attending the Sex after these Labours are owing entirely to the Child being detained too long in the Passage, thereby keeping the Parts overstretched; and also that many Children are killed by the same Means, § 46. both which, by proper Management, might be avoided, when in skilful Hands.

§ 147. We are, in the next Place, to consider, whether Miscarriage does not proceed from some Defect in the *Fetus* or Embryo, § 144.

It may be remembered, that I said, § 21, 24, 25, 31. that the Embryo was supported *in Utero* by Absorption; and that the stronger it was, the more it absorbed, and thereby made the *Placenta* adhere the closer to the *Uterus*: Hence, therefore, whatever may weaken or kill the Embryo, may occasion an Abortion; and that they have Distempers whilst in the Womb, is evident, because several have been born with the
Small-

Small-Pox and Measles upon them; and others have been born with Dropsies, &c. of which they may die in the Womb; whence the *Placenta* might soon separate from the *Uterus*, &c. These may be deem'd amongst the incurable Cases, except when the Complaint is occasioned by the Mother's Humours; and then she must be put into a proper Method, according as the Case may require: As great Judgment will be requisite in this Case, as in § 144. or any of the above, from § 132. to § 142. By this strict Enquiry we may see, that although the Person miscarries sometimes in the first, sometimes in the second, third, fourth, or fifth Month of Pregnancy, yet the Embryo may be of the same Size; which proves that they all died about the same Age, although not brought forth till some Months after their Death; as were the Cases mentioned by SENNERTUS(*m*), HILDANUS(*n*), PLATERUS(*o*), and many others.

§ 148. From what has been said, § 19. 24, 25, and to 31. we may easily conceive, how a bad Formation or Corruption of the Umbilical Chord may either kill the Child, by not conveying the Nourishment to it, or may separate the *Placenta* from the *Uterus*, by being too short, as mentioned by M.

(*m*) Medic. Practic. Lib. IV. part. ii. Sect. 6. cap. 2.
(*n*) Obs. Chirurg. Cent. 2. Obs. 50. (*o*) Observ. Med.

LITTRE (p), where it was not above half the usual Length. And MAURICEAU (q) says he found one so short (*un Tiers d'Aune*) that the Child could not be brought forth without bringing the After-birth at the same Time: The same Case he again met with soon after (r); but in this last, the Chord was also as thick as the Child's Arm, whose Belly was quite flat and empty. Again, (s) he delivered another Person, whose Umbilical Chord was not above one Third of the usual Length; and another had only half the right Length (t); and another he met with (u), whose Chord was only half a Foot; and he observed this Shortness always occasioned violent Pains to the Mother (w), by the Length of a tedious Birth. HILDA-NUS (x) mentions one, whose Chord was only a Span and a half in Length; vide § 58. No. 9. From what has been said, from § 19. to § 31. we may easily see how a scirrhus Placenta may occasion an Abortion, both by killing the Fetus, and also separating easily from the Uterus. Many Instances of this Kind may be found in MAURICEAU (y). *Midw. Case*, as well as the last,

(p) Act. Frida. Lips. Ann. Wob. (q) Obs. 301.
 (r) Obs. 406. (s) Obs. 540. (t) Obs. 612.
 (u) Obs. 640. (w) Obs. 662, 687. (x) Obs.
 (y) *Midw. Case*, as well as the last, Obs. 241, 443.
 Obs. 632.

§ 148. are both of them not capable of receiving any human Assistance to prevent Abortion; but ought to be enquired into for the Reasons assigned, § 144. where a Person has had scirrhus *Placenta* several Times, they are commonly occasioned by a faulty Womb.

§ 150. As I mentioned the too great Thickness and Toughness of the *Chorion* and *Amnios*, as one Cause that renders Labour difficult, § 23, 47, 58, No. 7. so, on the other Hand, when they are too thin and tender, they are apt to burst and let out the Waters, by which the young Embryo or *Fœtus* is often destroyed by the Pressure of the Womb, § 21.

This Case, I apprehend, happens oftener when there are Twins, than in single Births; and that too, when each *Fœtus* has its peculiar Bag; for then the stronger Bag will, by compressing the weaker (especially if the Os *Uteri* be a little open) often burst it; two or three Instances of which have fell in my Way: The most remarkable of them I shall mention:

OBSERVATION XXV.

A Mechanic's Wife of this City (York) when about two Months pregnant, perceived daily a little Water come from her Womb, which made her apprehensive, that what

she took for Pregnancy, was really a Dropsy in the Womb, as she called it; However, as she found no immediate Danger, and was willing to avoid Expence, she made no Application for Assistance, altho she daily parted with a little Water for some Days, and then the Running ceased; she went on to her full Time, and brought forth a living Child, and had as much Water in the Bag, as she used to have with her former Children; but the After-birth, she said, was larger than usual, having something growing to the Side of it (as they told her.) The next Year she became pregnant again; and upon the Waters breaking out in the third Month, she applied to me for Assistance, lest (as she said) she should have the like Substance grow again; that might be larger, and not be got so easily away. From the above Account I conjectured what was the Case; which the Event verified; for I did imagine that she was with Twins, and that the Bag of one of them had burst, but the other still increased, and compressed the *Placenta* and Embryo within the Bag, so as to appear as above described; I therefore desired this Woman not to be under any immediate Concern, but to keep at Rest, and if any thing extraordinary happened, to let me know, and when she should lie-in, to tell the Midwife to be particularly careful to examine

examine the After-birth very accurately, and if there was any Appearance different from what was common, to send for me; Which accordingly was done; and I found the Remains of a *Fœtus* or Embryo, about three Inches long, with its Integuments, &c. compressed very flat, and mostly corrupted, although the new-born Child was at its full Growth and healthy. This made some of the By-standers imagine there had been a Superfœtation, but I soon shewed them their Error.

OBSERVATION XXVI.

A Mistake of the like Kind happened at *Harlington*, five Miles from *Doncaster*, where the Wife of a Farmer fell into Labour, and was delivered of a living Girl with the *Placenta*, on *Friday* the 25th of *May* 1750, and on *Monday* (the 28th) following, about Six o'Clock, was delivered of a *Fœtus*, which came away with a massy Substance, but whether fleshy, or large Clots of Blood, they could not tell; however, the Woman recovered very well. The *Fœtus* was compressed quite flat, and is represented in *Tab. VIII. Fig. 13, 14.*

This Account, with the *Fœtus*, was sent to me by Mr. *Thwaites* of *Doncaster*, who was concerned for the Patient; and I have

the *Fetus* now in Spirits, amongst my Collection.

A Case like this is mentioned by JOHANNES DANIEL GEYERUS (2). He says a living Child was born, and, *Quum verò peritus Secundinam inspicerem, quæ non fere plerumque oblonga, sed plana & rotunda erat, inveni eam circumdatam tenaci membrana, inque hac inclusum alterum filiolum ad Spithamæ longitudinem, cujus Funiculus Umbilicalis insertus erat propriæ Placentæ, quæ alteri fortissime connexa erat.* This had been dead some Time; for he says, *Cerebrum & Hepar erant putrida, cor verò instar cordis alaudæ, renes instar phaseoli, Funiculus Umbilicalis instar pennæ insertus hepatis & vesicæ, &c.*

§ 151. In every Case, after the *Placenta* is separated from the Womb, the Woman must be delivered with all Speed, for the Reasons before given, § 9. and from § 24. to § 27. and in other Places. Before the fourth Month of Pregnancy, we need not be much concerned about what Position the Child is in, for it will easily come away in any Posture; and for those who miscarry in

(2) M. N. C. Dec. 2. An. 5. Obl. 133. the

the second, or Beginning of the third Month, the *Placenta* comes away generally with the *Fœtus*, and sometimes the whole *Ovum* comes with the Waters contained therein: But then all this Time the poor Patient is flooding, and laying the Foundation of future Distempers, such as a Dropsy, *Leucophlegmatia*, *Fluor Albus*, and all such as may be caused by too great an Hemorrhage; which ought to be avoided as much as can be, not to run into another Extreme; and therefore the sooner the Patient is delivered, the less she will flood, and, *ceteris paribus*, she will recover better, and be more likely to enjoy a good State of Health afterwards.

M. PUZAS (a) says, he has seen Women, who evacuated each more than six or seven Pounds of Blood in less than twelve Hours, before the *Ovum* has been discharged. Therefore, says he, when the Patient has Pains, and the *O. Uteri* is a little open; when the Floodings are accompanied with Weakness, and when there is no longer Doubt of the Separation of some Parts of the *Placenta*, we ought to proceed to the Delivery, which is then necessary, and must be performed, however little Disposition there should be towards it; because, if we should commit

(a) *Memoir. de l'Acad. Royal de Chirurg. Vol. II. Mem. 10.*

! this Operation to Nature, which always acts slowly in Flooding, we should lose a precious Interval of Time. And I have observed that those, who had Pains sufficiently strong to allow Nature to act in a Labour, which promised Celerity, lost less Blood than those whose Pains were languid; and that such Women were very happily delivered: Hence Nature seems to point out to us to procure Pains, where there are none, or to augment them when they are too languid: For this Slowness, by giving Time to the Discharge of the whole Blood, may prove mortal to the Mother, before the End of Delivery. I could give many Instances of these Inconveniences from Cases I have met with; but I think it more advisable to give the Authority of others. MAURICEAU, LA MOTTE, GIFFARD, and others have given us Cases, where the Patients have been seized with such violent Floodings, for Want of a speedy Delivery, as to faint away, and sometimes to die; at six Weeks of Pregnancy (b), at two Months (c), at ten Weeks (d), at three Months (e), at three Months and a half (f);

(b) La Motte, Obs. 208. (c) Mauriceau, Obs. 77, 154, 694. (d) Mauriceau, Obs. 297, 508. dern. Obs. 20, 144. Giffard, Obs. 154. (e) Mauric. Obs. 104, 255, 244, 362, 614, 639. dern. Obs. 116, 144. La Motte, Obs. 217, 357. (f) Mauric. Obs. 663. La Motte, Obs. 216, 356.

at four Months (g), and at five Months (h); in some of which Cases the Os Uteri was so close, that they could scarce introduce a Finger, and they have been obliged to leave the Patient to Fate; when several have died by the Loss of Blood; others were reduced so weak and feeble, that the Os Uteri became quite relaxed, thro' Weakness, before they could part with their Burthen, §. 152. These Things induced me to try to find out some Method of Assistance, and not suffer the poor unhappy Patients to languish very near, if not quite till Death; wherefore I have contrived an Instrument, which I hope will answer the Intention in several Cases; and if but one Life in a hundred be thereby preserved, it is worth the using; and that it will do more than that, I can demonstrate, as will appear in the Sequel. Before I shall describe the Instrument, and the Manner of using it, I shall lay down a few Data, which are universally allowed as such.

First, In all Methods used for the Recovery of any Patient, particular Care should be taken to avoid laying the Foundation of any other Distemper, as much as possible.

Secondly, That the Method Nature points out, is certainly the easiest and safest, espe-

(c) Maurie, Obs. 57, 164, 414, 474, 552, 578.
 dern, Obs. 91. (h) Maurie, Obs. 578. La Motte,
 Obs. 209, 210. Giffard, Obs. 109.

cially in regard to Deliveries; and therefore,

Thirdly, It is the Business of the Person, whose Assistance is called for, to aid Nature, and to make up, by Art, wherein she may be defective.

§ 152. According to the first of these Data, and for the Reasons above, § 151. the Patient must be delivered as soon as possible, to avoid a Flooding, lest she be brought from an healthful into a morbid State.

Secondly, I will examine the Method Nature takes to relieve the Patient.

It was observed, § 43. That whenever the Os Uteri (at the Time the Woman should be delivered) was prominent, hard, thick, and difficult to reach, it portended a bad and difficult Labour; for the Difficulty of reaching it shews the Head does not press against the Os Uteri, which it should naturally do, § 39, 45. whereby it acts like a Wedge, § 40. with its Apex first presenting, § 34. When the Os Uteri is hard and thick, it shews the Pressure of the Head is wanting, which should stretch and dilate it; and the more it presses, the thinner the Os Uteri is, and the more it will press and extend it so well as the Head, § 78, 123. From all which it appears, that Nature extends or dilates the Os Uteri by a Force

Force that presses outwards from within the Womb, § 45. 46. 52. 55. 58. No. 4. whence we are shewn the properest and safest Method of assisting Nature, as is mentioned in the third Place, § 31. This is strongly supported and proved by a Case or two mentioned in LA MOTTE (1): A Person five or six Months gone with Child, fell from a Horse, whence a violent Flooding, attended with considerable Pains, ensued immediately: He was sent for, but could only, at first, introduce a Finger into the Os Uteri; at last he introduced four Fingers, but with all his Strength could not join his Thumb to them, though he tried above ten Times in vain; he put the Patient to Bed about Two o'Clock in the Morning, and tho' the Pains had continued all Night, she yet got some Rest: At Six he returned, and then the Os Uteri was dilated sufficiently; when he delivered her, and the Flooding ceased. In the next Observation he says, he was sent for to a Person about six Months gone with Child, who flooded much; the Waters were just come away; he introduced his Hand, got hold of the Feet, but was not able to bring one of them out with his Hand, and was therefore obliged to leave the Feet in the Orifices for a little Time; after which, upon examining, he found

found the *Os Tinea* sufficiently relaxed to introduce his Hand, and brought the Feet away. He wondered how the Hardness of the *Os Tinea* came to give Way in so little Time. In all Cases, therefore, where we want to dilate the *Os Uteri*, our best Method is to introduce a Finger or two (if there be Room) and by bending it at the Joint, make a rotatory Motion, as far as we can, and pull outwards at the same Time; by which, from repeated Experience I find, the *Os Uteri* will much sooner yield, than by the Operator's thrusting his Fingers wedge-ways into the Womb; and is much safer for the Patient, especially if she be far gone of her Time; for although, by great Force, the Operator may introduce his Hand to reach one or both Feet of the Child, yet if either its Head, Shoulders, or Hips be considerably larger than the Operator's Hand, and if he should then exert his utmost Strength to pull out the Child directly, it is evident that there may be Danger of tearing the *Os Uteri*, whence many Evils may ensue, such as Ulcers, Tumors, Cicatrices, and the like, which should be avoided; and if the Child be left long in the Birth, Bulls of another Kind § 146. may ensue. And I doubt not but the Case, mentioned in *Ob. XXIII. § 180.* has proceeded from some such Cause. Some inconsiderate People will object, That by this pulling, as
we

we extend the *Os Uteri*, we may bring on a *Prolapsus*, or a Descent of the Womb. But this can never happen in the present Case, because the Womb is above the *Os Pubis* and *Sacrum*, and cannot descend with the Child into the *Pelvis*, they being, as it were, Supporters to the Womb in that State: Where, indeed, there is only a small Embryo or *Fetus*, the Womb, not being sufficiently extended to lie upon the *Os Pubis* and *Sacrum*, might, if hard pulled, yield to the Force; but then, in these Cases, we have no Occasion to use such Violence.

§ 153. When a Person miscarries in the second, or Beginning of the third Month, the Embryo, being small, will easily come away after the Membranes are burst, especially if the Embryo has been any Time dead; for then, the *Placenta* being a lifeless Mass, § 26, 30. the Whole must corrupt and become tender: But if it should so happen, that the Waters do not break forth, then the Operator must introduce his Fingers into the *Os Uteri* as soon as he can, and endeavour to break the Membranes, and, if possible, to bring the Embryo and After-birth together, by enveloping his Finger with the Membranes, and drawing it out somewhat bent: If this Method fails, then he must use any Instrument in the following Manner, *viz.* First, introduce a Finger of one Hand (the left,

left, for Instance) quite to the *Os Uteri*; then take the Instrument in the right Hand, sliding the End, *Let. a. Tab. XVII. Fig. 19.* along the left Hand into the *Vagina*, and with the Finger at the *Os Uteri*, introduce the Instrument into the Womb; and as soon as the Wings at the End, *Let. a. Tab. XVII. Fig. 19.* are within the Womb, expand them, by thrusting at the End which is out of the *Vagina*, marked *Let. e.* This being done, the Instrument may (if there be Occasion) be thrust gently a little farther; and then the Operator, by pulling gently at the End, *Let. e.* and holding the Barrel, *Let. b.* fast in the left Hand, will bring the Wings, now expanded, to approach each other; and if they have catched hold of either the *Fœtus* or *Placenta*, the Operator must pull it forth, in a very gentle Manner turning the Instrument with a rotatory Motion; by which the *Os Uteri* will sooner be brought to dilate sufficiently, if not already done. This Pressure from within is the nearest to that of Nature, § 152. No. 2. by which the Delivery will be sooner brought about, and the Dangers from too great an Hemorrhage will be thereby avoided, § 151. which otherwise must inevitably happen, if the Patient be left to flood any Time; as will always be the Case, when the Delivery is left entirely to Nature; for, though the Patient might bring forth the

Fœtus

Fœtus without any Person's Assistance, yet for Want of the Pressure from within the *Uterus*, upon the Mouth of the Womb, § 152. it will not be sufficiently dilated, till the Patient becomes weak and feeble from a long and great Discharge of Blood, by which the Woman's Constitution will be greatly injured, § 151. and yet, on the other Hand, by this Method no Injury can ensue.

When the *Fœtus* has been any Time dead, and these Sorts of Miscarriages come gradually on, the *Os Uteri* will sooner yield; § 152. than when the Separation of the *Placenta* from the *Uterus* happens by an Accident, as by a Fall, Blow, or the like; in which particular Case, my Method of Delivery, as above, is the most useful and expeditious. And if there be Occasion to extend the *Os Uteri* yet farther, it may be done by introducing the Instrument as above, and expanding the End *a*, as is represented in *Tab. XVII. Fig. 18. Let. c.* and fix them thus expanded with the Screw, *Fig. 19. Let. c.* and then pull the Instrument outwards gently, turning it slowly round all the Time, that none of the Wings may press too long upon any particular Part of the *Os Uteri*. By this Means, we assist Nature in expanding the *Os Uteri*, in the very Manner she points out to us, § 151, 152. with more Ease to the Operator, and less

els Pain to the Woman, than with the whole Hand and Fingers bent in the *Vagina*.

§ 154. A Mole or False conception is a soft Substance, some being of a pulposus, soft, and spongy Nature, while others are membranous, sometimes being hollow, having a Sort of Serum or *Hydratides* within.

§ 170. In some we find no *Vesigia* of an Embryo; in others, after a strict Enquiry, we find a dry one, and no larger than a small Insect; sometimes it is as big as a Bee; and is, in short, of different Barks. Moles grow in the Womb, but seem to be no more than a diseased *Ovum*, after the Embryo is dead; they commonly come away about the third Month. A Mole is of different Sizes in different People, according to the Time it has been in the Womb, in some, weighing not above an Ounce, in others, perhaps, forty; the longer it remains in the Womb, the larger it grows, and consequently is the more dangerous; it adheres to the Womb, like the *Placenta*, but has no *Fetus* continued to it; the Formation of it is generally attended with the Symptoms of Pregnancy, but its Continuance is uncertain, sometimes coming away like an Abortion, at the End of two, three, or four Months; with the same Discharges of Blood, though commonly more violent; sometimes it remains for Years, and

and becomes scirrhus, which Disposition it often communicates to the Womb.

For some Months, it is impossible to distinguish between a true and false Conception, the same Symptoms being common to both; but in about three Months (before which Time the Embryo dies) if the Patient, instead of having her Belly grow full and somewhat large, perceives a particular Hardness, being a little sore between the Navel and Os Pubis, then there is Reason to suspect a False conception, which is confirmed in five Months at most, by her not becoming *quick*, as it is usually expressed; for a Mole has no Motion, but what is communicated to it by the Action of her who bears it; therefore when she uses any extraordinary Exercise, this is moved, which from its Weight is very perceptible to her; so that many have been deceived by this spurious Motion, and thought they were quick, perhaps for a whole Year together, or more, till the great Length of Time has convinced them of their Error. A Mole also, when large, gives a Sort of spherical Form to the Abdomen; but in true Pregnancy, the Head of the Infant being towards the Navel, raises a Kind of Elevation or Tumor there, whilst the Sides are more flat; but the Whole is round, if there be a Mole; and after the fourth or fifth Month, the Os Uteri is apt to be hard and strait, when there is a Mole, which

which is no more than what they call a *False-Conception*, only longer detained in the Womb.

Most commonly this fleshy Mass comes away before the End of nine Months, after the Manner of an Abortion, sometimes with, and sometimes without much Pain, but with a Flux of Blood: When this Flux happens, the Hand must be immediately introduced into the Womb, and the Operator must endeavour to open the Mole, that its Bulk may be lessened; and if the Whole be too large, it must be broke, or cut to Pieces, and then extracted; which may be done with either of the Instruments contrived by me, § 107, 133. If it continues after nine Months, without any apparent Motion, some advise to force it away by Emmenagogues and other Medicines, whereby to promote a Discharge of Blood from the Womb, which, at the same Time, forwards the Relaxation of the Orifice, and facilitates the Separation, which must be further promoted by dilating the Orifice with the Finger, or as has been described in § 152, 153. and so extracted as above. But a Person should be very cautious how he interferences in a Matter of such Consequence, even after the usual Time of Gestation be expired. For when my Wife was about five Months gone with Child, in 1738, a Lady of this City (*York*) was visiting her, and

and said, she only reckoned two Months longer than my Wife, viz. till *Christmas*, and that she had felt her Child stir a little before; but she was greatly mistaken, altho' she had had six or seven Children before; for, according to the Time she brought forth (which was in *May* or *June* following) she was not at the Time mentioned pregnant, although she fancied she felt the Child stir; neither had she any Mole or False-Conception in the Interim, nor yet did her Child seem to have been longer detained than usual in the Womb: All which shews, how cautious a Person ought to be in giving forcing Medicines of any Kind, or of doing any thing else, that might endanger the bringing on a Miscarriage.

§ 155. When the *Placenta* is left in the Womb for any considerable Time after the Birth of the Child, it so nearly resembles an Abortion, both as it occasions a Flooding, and by Reason of the Difficulty there is in introducing the Hand to extract it, that I chose to defer treating of this Head till now.

It may be remembered that I proved, that the *Placenta* becomes a lifeless Mass, after it is separated from the Child, § 10, 30. and that I have shewed the Manner how it ought to be extracted, immediately after the Birth of the Child, § 52, 53, 54.

But if that Method should not be followed, and if it should be left any Time in the Womb, Floodings will ensue, more or less, according to the Bulk of the After-birth, and whether it be in or near the *Fundus Uteri*, or at the Neck of the Womb, with other bad Consequences; for,

First, The *Os Uteri* will contract; where by the Introduction of the Hand will be rendered difficult, if practicable.

Secondly, Bad Consequences will ensue from Floodings; and,

Thirdly, The *Placenta* sometimes remains in the Womb and there corrupts, and occasions many Misfortunes.

§ 156. I have already shewn how soon the Womb will contract again, § 55. and I shall now produce sufficient Authority to prove how soon and how strongly the *Os Uteri* will contract after Delivery.

GIFFARD (i) says, that being called in, an Hour after the Delivery, he found the *Os Uteri* so contracted, that he could not readily introduce two Fingers, and that it was with Difficulty he introduced his Hand; nay, he says (k), he has found the *Os Uteri* so contracted in half an Hour, that it was

(i) Cases in Midwifry, Case 107, 127. (k) Case 134.

with

with some Difficulty he introduced his Hand into the Womb.

MAURICEAU (*l*) says, in three Hours after Delivery, he has found the *Os Uteri* so contracted, that he could not introduce his Hand into the Womb.

LA MOTTE (*m*) also tells us, that in ten or twelve Hours after the Birth of the Child, he has found the *Os Uteri* so contracted; that it was with Difficulty he could introduce his Hand, being obliged to dilate it gradually.

GIFFARD tells (*n*) us, he was called in, ten Hours after the Birth of the first, and two Hours after that of the second of Twins, and yet the *Os Uteri* was so contracted, that he was obliged to dilate it gradually.

LA MOTTE (*o*) says, that in fifteen or sixteen Hours, he has found the *Os Uteri* so contracted, that he was forced to dilate it by Degrees; and mentions one Case, where two other Surgeons had been trying to extract the *Placenta*, and yet he could only introduce four Fingers into the Womb.

GIFFARD (*p*) says, that in a few Hours after the Delivery, he could scarce introduce his Hand into the *Uteri*; and, when introduced, the Womb was so contracted, that he could not readily move his Hand.

(*l*) Obs. 504. (*m*) Obs. 358, 362. (*n*) Case 74.
(*o*) Obs. 363, 359. (*p*) Case 92.

MAURICEAU (q) mentions a Person who miscarried in the sixth Month of Pregnancy, where Part of the After-birth was left in the Womb, and, before he got to her, the Os Uteri was so contracted, that he could not introduce his Hand into the Womb.

All which Cases sufficiently prove the *first* Proposition, § 155. Whence it follows, *First*, That we should always, if possible, introduce a Hand into the Womb immediately after the Birth of the Child, and extract the *Placenta*, as before directed: But if we should not arrive in Time for that, then, *Secondly*, That we should extract it in the Way the least prejudicial to the Patient, § 151, 152, 153. especially as, at this Time, she is greatly fatigued by her Labour, and, perhaps, is far spent by Flooding.

§ 157. I shall now proceed to the *second* Part, § 155. and shew the bad Consequences of Floodings by the *Placenta* being, either wholly or in Part, left in the *Uterus* for any Time.

GIFFARD (*) says, he has been sent for to several Persons, and was with them in half an Hour after the Birth of the Children, and found the Patients had lost so

(q) Obs. 336. (*) Case 72, 78, 124, 134.
much

much Blood, that he thought they would have died before the *Placenta* could be brought away, having frequent Faintings, cold Sweats, and Coldness in the Extremities. He mentions another Person (s), with whom he was in an Hour and half after the Delivery, who had lost so much Blood, as to faint frequently, attended with a low Pulse, cold Sweats, and Coldness in the Extremities; and although the *Placenta* was soon extracted, yet she had lost so much Blood, that all the foregoing Symptoms continued for about twenty Hours, and then she expired. He also mentions another Person (t), who, in two Hours, lost so much Blood, as to swoon away several Times before the *Placenta* was extracted; which being done, the Flooding ceased.

MAURICEAU (u) says, a Person lost so much Blood in three Hours, betwixt the Birth of the Child and the Extraction of the *Placenta*, that she died in seven or eight Hours after.

GIFFARD also mentions (w) a Person, who bled to Death in fourteen Hours, the After-birth being left in the Womb.

LA MOTTE (x) mentions a Person, who bled so much in fifteen Hours after Delivery, occasioned by the *Placenta* being left in the Womb, that when he arrived, he

(s) Case 79.

(t) Case 74.

(u) Obs. 504.

(w) Case 113.

(x) Obs. 363.

found her quite spent, and almost without Pulse; that she was a long Time in recovering her Health, being afflicted for a great while with a very bad Head-ach, and a very troublesome tinkling Noise in her Ears, as is usual in those who have suffered any great Loss of Blood. He also mentions (y) another Person, that bled to Death almost immediately, who was opened, and a Part of the *Placenta* was found in the Womb.

MAURICEAU (z) tells us of a Person who miscarried in the seventh Month of Pregnancy, and died the same Day by a Flooding, occasioned by a Part of the *Placenta* being left behind. And LA MOTTE mentions (a) another Person, who bled to Death on the second Day after Delivery, whom he opened, and found the *Uterus* no bigger than a Man's Fist, in which was a Piece of the *Placenta*, as big as a large Hen's Egg.

§ 158. I come now, in the third and last Place, § 155. to shew where the *Placenta* has been left to corrupt within the Womb; with the Mischiefs which thence have ensu'd.

MAURICEAU (b) mentions a Person who miscarried in the sixth Month, whose *Placenta* came away by Piece-meal, in a corrupted State, in about six Days. He also

(y) Obs. 364.
365.

(b) Obs. 336.

(z) Obs. 658.

(a) Obs.

mentions

mentions (e) another Person, whose *Placenta* came away in the same Manner and Condition in about eight Days. In another Place (d) he tells us, he extracted a Piece of the *Placenta*, as big as a Hen's Egg, a Month after the Child was born; which, during the last fifteen Days, caused Convulsions and a great Flooding; both which immediately ceased, after the Piece was extracted as above.

LA MOTTE (e) says, he was sent for to a Patient, whose *Placenta* had remained seven Days after the Birth of the Child (who was very large) and the *Placenta* was so corrupted that he could do her no Service: It came away in six Weeks; during which the Patient lay under a most terrible Stench, and was above six Months before she quite recovered.

REGN. DE GRAAF (f) tells us of an *Uterus* that swelled to weigh forty Pounds; occasioned by a *Placenta* being left in the Womb after an Abortion. Many are the Disorders which arise from a Body remaining and corrupting within a human *Uterus*, such as Inflammations and Suppurations of the Womb, Hæmics, &c. which are mentioned by the Medical Authors, but are too numerous to be here inserted; these that I

(c) Obs. 462.

(d) Dern. Obs. 25.

(e) Last

Reflection before Observ. 167.

(f) Med. Sept.

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have already mentioned being sufficient for my Purpose.

§ 159. Seeing that, if the *Placenta* has not been extracted immediately after the Birth of the Child, as before directed, § 52, 53, 54. the *Os Uteri* contracts so fast, § 156. and seeing the bad Consequences, which sometimes thence ensue, § 157, 158. we ought to leave no Stone unturned to remove the Cause, which is by as speedy and as safe Delivery as the Case will admit of: And from what has been said in § 156. we see, the Case is frequently much the same as when a Woman miscarries; and, for the like Reasons, the same Method should be taken.

Therefore, when a Person is sent for to a Patient, where the After-birth is left in the *Uterus*, the Operator may try to introduce his Hand; which if it be immediately or soon after the Birth of the Child, he may perhaps easily do; but if it has been born any considerable Time, the Operator cannot introduce his Hand, in many Cases, § 156. without doing too great Violence to the *Os Uteri*; which has no Occasion to be distended so much, because the *Placenta* will come away, although the *Os Uteri* be not distended to half the Size of a Man's Fist; therefore, Why should the Mouth of the Womb be overstretched and hurt, if it can be avoided? Which, by my Method, in many

many Cases may be done, as I shall presently make appear.

There may be two Cases, where After-births are left behind, and yet the *Os Tincæ* may be too much contracted to admit the Introduction of the Hand into the *Uterus*, without too much Difficulty, and without distending the Mouth of the Womb more than the Bulk of the Body to be extracted may require. The one is attended with a violent Flooding, which shews the *Placenta* is separated wholly or chiefly from the *Fundus Uteri*, but remains wholly or in Part in that Place, betwixt that Part of the Womb, *Tab. IV.* marked *l*, and the Part facing the *Os Uteri*: The other is, when the *Placenta* is also separated, but advanced chiefly to the *Os Uteri*, betwixt the Part marked *ll*, *Tab. IV.* and the Mouth of the Womb; whereby the *Fundus* (whence the greatest Discharge comes) can be more contracted; wherefore the Flooding will not be so violent, § 55. especially if the *Musculus Orbicularis* be strong. In the first Case, the Patient would bleed to Death presently; in the latter, the After-birth would corrupt and bring on the Symptoms usual upon the like Occasions.

§ 160. Whenever a Patient happens to be in the *first Case*, § 159. she must be delivered soon, or she may bleed to Death in a very short Time, § 157. This we find, according

according to the common Method, attended with much Difficulty, § 156. if practicable at all; and when the Hand is forced in, it distends the *Os Uteri* more than the Bulk of the whole Substance of the *Placenta* requires; which ought to be avoided, § 151, 152. Hence we find there are two Methods by which the *Placenta* may be extracted, the one without, the other with the Introduction of the Hand into the Womb: Therefore, when a Person is sent for to a Patient, whose *Placenta* is wholly or in Part left in the Womb, he must first search to find the State of the *Os Uteri*; and if he perceives it too much contracted to admit his Hand to pass into the Womb without too much Force, he may try to introduce a Finger, in order to reach the *Placenta*, by which he will find its Situation: This done, let him take my *Extensor Oris Uteri*, *Tab. XVII. Fig. 19.* warmed and oiled in the other Hand, and introduce the End, *a*, along the Hand and Finger, which is in the *Vagina*, till it enters the *Os Uteri*, gently turning the Instrument as a Screw till it be within the Womb; then holding it with that Hand already in the *Vagina*, thrust open or expand the Wings, as in *Fig. 18. Let. a*, by gently pushing at the Handle, *e*, *Fig. 19.* with the other Hand, and endeavour to catch hold of the *Placenta*, and then draw it out, turning the Instrument as
if

if drawing out a Screw gently; by this Means, if the *Placenta* be quite or near separated from the Womb, and be tolerably sound, it will come away whole, and will extend the *Os Uteri* no more than its own Bulk requires, and that too, by pressing outwards from within, which is the Way of assisting Nature, § 152. and likewise of avoiding to lay the Foundation of any other Complaint, § 151. No. 1. This Method, if properly executed, will relieve the Patient much sooner than any other; and she will avoid what is almost as bad as a second Labour, at a Time when her Strength and Spirits are quite spent, by the Fatigue in bringing forth the Child; for this Way gives her very little Pain.

§ 161. But if it should so happen, that the *Placenta* is broke into several Pieces, some of which may yet adhere to the *Fundus Uteri*, or, perhaps, may be kept therein by the Part 11, *Tab. IV.* contracting too soon and too closely, as I observed before, § 55. then I advise, that my *Extensor Oris Uteri* be introduced to the *Fundus*, or at least till it has passed that Part marked 11, *Tab. IV.* and then to expand the Wings, as in *Tab. XVII. Fig. 18. Let. a,* and so fix them in that Condition by the Screw, *Fig. 19. Let. c,* and then gently withdraw the Extensor towards the *Os Uteri*, turning it as if you were drawing out a Screw; by which Means

Means it gives an Opportunity for the *Fundus Uteri* gradually to contract; and as it extends or takes off the Resistance, that the other Part of the *Uterus* might make, to the Pressure of the *Fundus*, whatever lies loose in the *Fundus* will be thereby propelled forwards, and be pushed near to, if not out of the *Os Uteri*, or, perhaps, might be extracted by loosening the Screw *c*, Fig. 19. How the Womb will do this, may be easily understood by any Person who is conversant in *Midwifery*, who has made his proper Observations and Remarks; for he will find, that after Extracting the *Placenta*, if he holds his Fist in the *Fundus*, as described above, he will soon have it closely embraced by that Part of the Womb; and if he gradually withdraws his Fist, he will perceive how quick and how strongly the *Fundus Uteri* follows his Hand, when there is no Substance within to hinder it; which sufficiently shews the Advantage this Method has to the others heretofore made use of.

§ 162. There is yet one Case, wherein the Hand must be introduced into the Womb, if possible; and that is, when the *Placenta* has been broke into several Fragments, which still adhere to the *Uterus*; for although the *Placenta* while whole, remaining of the same Size after it is separated from the Child, and the Womb contracting at

at the same Time, must occasion a Separation from the *Fundus Uteri*, yet some small Fragments may not only adhere, but also be closely held by the Orifices coming out of the Sinuses, § 7, 8. which must contract as the Womb contracts; In which Case, the Hand must, if possible, be introduced into the *Uterus*; and if the *Os Tincæ* be so contracted, that it cannot be done without Violence, then the Operator had better dilate it with my *Extensor Oris Uteri*, as described, § 153. than to act contrary to Nature, and thereby run a greater Hazard of doing an Injury to the Patient, § 151, 152. The Hand being introduced, the Operator must then endeavour to rub off the adhering Pieces with the Back-part of his Hand and Fingers; and if that will not do, then he must pick them off with his Fingers and Thumb, carefully avoiding the least Hurt to the Womb by his Nails; which done, let him hold his Fist a little while within the *Uterus*, as near the *Fundus* as he can; by which Means he will give an easier Egress to the grumous Blood, which was stagnated in the Sinuses, whence After-Pains, Floodings, and Suppurations may be avoided. The Manner of thus keeping the Hand in the *Uterus* in these Cases, and the Advantages that hence accrue, is what I from repeated Experience have found, as will be more fully explained in speaking about

about the After-pains, &c. And though some ignorant Persons may think this is attended with Pain and Trouble to the Patient, yet I must aver the contrary, and do appeal to the Persons whose Case required this Treatment, if they had any Increase of Pain, after the Hand was in the *Uterus*, and there held quietly for a small Time; and if upon this, in some Cases, the After-Pains have not abated, § 16.

Having now said every thing relating to Deliveries of all Kinds, I come, in the *next* Place, to treat of the Diseases of Lying-in Women; and *first* of the *Lochia*, or that Flux of Blood, which immediately does, or ought to follow after the Birth of the Child and the Extraction of the *Placenta*.

L O C H I A.

§ 163. The first Thing to be regarded after the Delivery is the *Lochia*; what they are, how secreted, and their Use, I have already shewn in § 55. and also the Reason why (and in what Constitutions) they are in greater Plenty in some than in others, and yet without Danger to either. From whence it may be seen, that no certain Time of their ending can be determined, that Flux depending upon the sooner or later Reduction of the *Uterus* to its proper State, § 55. I have

have known some to stop in four or five Days, while others continued for three Weeks, and yet without any apparent Inconvenience on either Side. But I must take notice, that the larger and stronger the Child is, *ceteris paribus*, the larger the *Placenta* is, and consequently the Discharge, for a Time, is greater also; whence the same Woman, in the same State of Health, may have different Quantities at different Births. They are commonly right when the Colour gradually grows paler (which, I must observe, are at first more florid than the Blood taken from the Arm) when they are of an equal Consistence, without any *Fator*, and daily decrease in Quantity. But on the other Hand, if they keep the same Colour and Consistence for some Time together, with an Increase of Weakness, Paleness of the Visage, low Pulse, *Syncope*, or the like, then they are in greater Quantity than Nature can bear, or intended. In this Case, they may proceed from some of the Vessels being torn, or from too much Blood being directed thither, by whatever Means, or from a vitiated Blood. Hence, from § 138, 139, 140, 141, 142. we are taught, that the most proper Method is, in some Cases, to take a little Blood from the Arm, for the Reasons assigned, § 140. to keep the Patient quiet; to order a proper Diet and Agglutinants, with or without Opiates, and gentle

gentle Astringents sometimes, if there be no Inflammation, and sometimes to apply a Circle round the Patient's Waist, § 53. But, if the *Lochia* are clotted and fetid, then there is Reason to fear some large Clots are lodged in the *Uterus*, which must immediately be brought out, if possible. These Women, who are subject to immoderate Discharges of the *Lochia*, ought to refrain from Coition for two or three Months before their expected Time of Labour, § 131. They, who have suffered a great Discharge, are frequently troubled with a slow Fever, Pains in the Head, Swellings of the Legs, and have a pale, wan Countenance.

§ 164. When the Quantity of the Mother's Blood is small, or when the Contraction of the *Uterus* is very quick, § 55. or when an Obstruction happens in the Arteries of the Sinuses, the *Lochia* will be in very small Quantity. The Constitution of the Patient, and the State of the Pulse readily discover, to a skilful Person, what the Want or too small Quantity of the *Lochia* depend on; and, in the first Supposition there is no Harm from this Stoppage, but if we attempt, in that Case, to force them, as some ignorant Pretenders to Midwifery too frequently do, we do Mischief, by draining the Mother too much, or, perhaps, causing Inflammations in the Womb by bringing the Patient and by preventing the

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the Blood thither: But in the other Cases, we ought to encourage this Evacuation by proper internal Medicines, according to the Symptoms, and by Injections, &c. applied to the Womb, or warm Cloths near it, while other Evacuations are promoted, or made properly, § 142. if the Symptoms become urgent. Therefore, if this Obstruction be attended with Pains in the Head, Breasts, Back, and Womb, with a strong or hard Pulse; if the Abdomen swells, with a Difficulty of Breathing, *Syncope*, *Delirium*, &c. then we may know the Discharge ought to be promoted; and towards promoting that, we must have a strict Eye to the Cause and the Symptoms; whether from an Inflammation in the Womb, by any Person's too long or too violently attempting to promote the Discharge, or from any other Cause; whether it proceeds from a Looseness, or from taking Astringents *mal-à-propos*, or the like; whence we must take our Curative Indications, whether and where to bleed, § 142. and whether to give Aperients, Stimulants, or Purgatives; all which require great Care and good Judgment, and may be known from what has been said, from § 132. to § 144. inclusive.

§ 165. After Delivery, Women are frequently afflicted with what are commonly called *After-Pains*, which sometimes are very great, and by preventing the Patient

from taking Rest (who has already been too much disturbed) often prove of bad Consequence. These are sometimes occasioned by the violent Strainings during Labour; by the Blood being too viscid or acrimonious; by the Straitness of the Vessels, or by cold Air getting into the Womb, § 42. *Obs. VI.* whence we are naturally shewn, that Attenuants and temperate Medicines, sometimes mixed with gentle Opiates, properly corrected, are to be given inwardly; but if the Pains proceed from Clots of Blood left in the Womb, they must be brought away before the Pains will cease; and the Pressure of the Blood in the Vessels and Sinuses of the Uterus must be lessened; § 169. Sometimes an Inflammation of the Womb, whether caused by the Midwife, the Stoppage of the *Lochia*, or the like, will bring on *After-Pains*, as some call them; and then the Symptoms generally are, a violent Tension, Heat, and Pain in the Hypogastric Region, which the Patient can scarce bear to have touched; and she can lie in no other Position than on her Back; if she tries ever so little to lie on a Side, she feels a heavy and painful Weight falling on the same Side; the Loins and Groin on the contrary Side suffering an intolerable Pain; which increases with a Tension on the Belly, a Fever, and Difficulty of Breathing; when the

the *Lochia* either are lessened, or wholly stopt, with a constant Inclination to make Water, and sometimes with Pains in the Thighs, § 67. But lest some unwary Reader should be led into a Mistake, it is not improper to give him a Caution to distinguish betwixt the Pains of the *Uterus* and that of Cholicks; for the first are fixed, but the last are wandering. By finding out the Cause we are naturally led to the Method of Cure, by the Rules already laid down: Plentiful, but proper Bleeding, § 142. with a cooling *Regimen*, is, in general, absolutely necessary; and if the Disorder proceed from a Bandage round the Abdomen being too tight, as in § 55. the Cause must be removed; but if the Inflammation be caused by a Stoppage of the *Lochia*, Emmenagogues and all Kinds of warmer Stimulants and Purgatives must be avoided; and the Secretion of the Milk must be promoted, § 168, 169, 172. which is a Method I never knew any Author to take notice of, or to follow it in order to remove these Uterine Complaints.

§ 166. After-Pains, although generally heretofore esteemed amongst the *Disorders* of Lying-in Women, are not properly so; for I am thoroughly convinced, from repeated Experience, that, in general, they are as necessary as Labour-Pains, as I shall shew, both from Reason and Practice, the first ac-

counting for Cases which I have met with in the latter; both which I will set forth in the best and most faithful Manner I am capable of doing; and shall leave the Reader to judge of the one, and the skilful Practitioner of the other. VI. § 8.

By After-Pains, then, I mean those Pains with which a Woman is afflicted a little after the Expulsion of the Child, and of the Whole or Part of the After-birth: They come and go in the same Manner as Labour-Pains, but not so violent, nor at so short Intervals of Time: These are to be distinguished from Cholic-Pains and those caused by an Inflammation of the Womb, as in § 165. These are caused either by Pieces of the *Placenta*, or Clots of Blood left in the Cavity of the Womb, or by grumous Blood lodged within the Sinuses or Cells within the Substance of the Womb, § 8, 9. How the first Cause is to be removed, is already mentioned; how the second can occasion Complaints of this Kind, and how to be removed, or rather prevented, is what I am about to shew.

It may be remembered, that I shewed the *Uterus*, especially towards the *Fundus*, had many membranous Cavities, communicating with each other, having numerous Arteries spread on them, whose lateral Branches open into these Cells or Sinuses, from

from which Veins go out to join the other Veins, that return the Blood from the other Parts of the Womb. That these Sinuses, in the ninth Month of Gravitation, are so large as to admit the End of the biggest Finger, § 8. *Tab. IV. Litt. k, k, k;* and that they open into the Cavity of the Womb through numerous Orifices, as at *e, e, e, Tab. IV. § 7.* which will at the same Time admit the End of the little Finger, as I shewed also, that the *Fœtus* is supported by absorbing Parts from the Blood contained in these Sinuses (brought thither through the Arteries) and returning other Humours back again into these Sinuses through the Vessels composing the *Placenta*, § 24. to 33. inclusive. — I shewed also, how the Womb contracts as soon as its Contents are discharged, and what the *Lochia* are composed of. I must now also remind the Reader, that the Arterial Blood, when extravasated, is much more fibrous or grumous, composing harder Clots than the Venal Blood: From all which, the Anatomical Reader will see how the Arterial Blood, contained in these large Sinuses, can become grumous or clotty, especially if the thin Humours are not returned from the *Fœtus* through the *Placenta* to dilute it (which must be the Case, if the *Fœtus* be dead, or separated from the *Placenta*) while the Veins of the Womb are returning the

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thinner

thinner or more fluid Part of the Blood from the Sinuses. He can also easily see, that upon the Expulsion of the Child and *Placenta*, the Orifices opening into the Cavity of the *Uterus* must contract; and seeing that these Orifices are less than the Sinuses, he will likewise easily perceive how this grumous Blood may be detained in the latter (especially as they are always full, while the Womb is extended, and the *Placenta* still adheres to it.) At the same Time, he can also see the Use and Benefit of these After-Pains, which by stimulating or compressing the Vessels and Muscular Fibres, make them exert their Force to squeeze out this grumous Blood, which otherwise might remain there, and occasion Inflammations, Suppurations, &c. From all which we find, that these After-Pains are necessary towards the removing or preventing an Inflammation of the Womb; wherefore we must not be too forward in giving strong Opium, or other internal Medicines, which may take them off, while this grumous Blood is lodged within those Sinuses. I doubt not but those Patients, who die from the eighth to the fourteenth Day after the Birth of the Child, whose *Uterus* has been inflamed with the Symptoms abovementioned, & who have been injured with the too free Use of Opium, &c. I would, therefore, never advise a Person to endeavour to prevent After-Pains, for some Time after

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Delivery, unless the Patient be endangered thereby of suffering a worse Disorder; and in that Case, he should, if possible, search if they do not proceed from Parts of the Placenta, or by the Clots of grumous Blood being left in the Cavity of the Womb: And if his Hand can be introduced into the Uterus, the Method mentioned in the two following Observations will remove the Cause more expeditiously, and much better, than by any internal Medicines; and, from repeated Experience I speak it may in a great Measure be prevented by the Method here after proposed, which I have often made use of with the wisest for Success. This I was first induced to do, by what I had remarked in the two following Observations:

OBSERVATION XXVII

In 1741, a Person in this City (P.D.K.) brought forth a living Child, and the Midwife pulled the Placenta away, as she thought, but much broken; y^t, after putting the Pieces together, she said the Whole was come away, in less than half an Hour; the Patient had very violent After-Pains, nearly resembling Labour-Pains, attended with a little Flooding; the Friends of the Patient were apprehensive of another Child being in the Womb, from these Symptoms; the Midwife endeavoured to convince

them to the contrary, as she could feel no
 Hardness within the Abdomen, and as she
 perceived no Descent of either Child or
 Bag. However, as the Pains were strong,
 I was sent for in a Hurry, and was there in
 less than an Hour after the Child was born.
 The Patient having such strong After-Pains,
 I endeavoured to introduce my Hand into
 the Uterus, which after some Difficulty I
 accomplished, and soon found a Piece of the
Placenta still adhering to the *Fundus Uteri*,
 which I soon separated without pulling it by
 my Fingers Ends, lest I should have scratched
 the internal Surface of the Uterus with my
 Nails; for, after I had introduced my Hand
 with the Fingers extended, and with my
 Palm to the Woman's Belly: She lying on
 one Side, I bent my Fingers Ends to the
 Palm, and with my Knuckles I gently rub-
 bed off the Piece of the *Placenta* which ad-
 hered, without much Difficulty as to the
 Part which adhered, but with some Diffi-
 culty as the *Fundus Uteri* was much con-
 tracted; in rubbing with my Fist, I per-
 ceived several small membranous Strings (as
 I then thought them) adhering to the Ute-
 rus, but I was soon undeceived; for upon
 expanding my Fingers, by which I stretched
 the Uterus a little, several of these came
 into my Hand, which I drew out, and found
 what I had imagined to be Membranes, to
 be only oblong grumous Blood resembling
 Fibres,

Fibres, like those which adhere to a *Spacula*, after stirring Arterial Blood in a Basin for some Time in a circular regular Motion, I introduced my Hand a second Time, and made the Experiment again, but found none of these little Clots (if I may so call them) within the Cavity of the Womb, yet upon expanding my Hand, several came out of the Orifices again, which I could plainly perceive, and after keeping my Hand there a little while, I brought away all that were within the Cavity of the *Uterus*, and the Patient's Complaints immediately abated, and she recovered very well from that Moment.

OBSERVATION XXVIII.

About three Months after the above Case, I was called in to visit a Person who had been delivered not an Hour before, and altho' a living Child and the whole *Placenta* were come away, yet she had very little Discharge of Blood, but violent After-Pains resembling Labour-Pains, upon introducing my Hand into the *Vagina*, I there found some clotted Blood, which I soon brought away. I then introduced my Hand (in the Manner last described) and could find neither any Fragments of the *Scarcina*, nor any Clots of Blood, which surprised me a little, but, in moving my Hand about for more Certainty, I thereby extended the

Uterus

Uterus a little farther, and then found the small Clots come into the Cavity of the Womb, as before described, but more numerous, which gave me a better Opportunity to examine whence they came, and what they could be; after a little Time, I cleared the Womb of all its Contents, and the After-Pains soon ceased, and the Patient recovered very well.

These Phenomena being what I had never heard or read of before in any Author, I began to consider whence they could spring, and could account for them in no other Manner, except as above; which I am the more convinced of must be the Case, from Experience since that Time, because, where I have been employed for Persons, who always, in former tedious Labours, were afflicted with violent After-Pains, for some considerable Time, I have relieved them; for by keeping my Fist at the *Fundus Uteri*, and gently moving it in a rotatory Motion, an incredible Quantity of these Clots have come out of the Sinuses in a very little Time, and having brought all out of the Womb, the After-Pains have been trifling afterwards. The same Practice I have followed in many Cases, especially where I have delivered the Patients of dead Children, while the *Placenta* still adhered either wholly or in Part; because then the

Arterial

Arterial Blood not only lodged in the Sinuses, § 8. but also there was no Return from the *Fetus* to dilute it, which made it more difficult to pass the Orifices which come from the Sinuses into the Cavity of the Womb. Some ignorant Persons will object to this Method, falsely imagining that it will give the Patient no small Pain. But they are mistaken; for as soon as the After-birth and Clots are withdrawn, the Efflux being in the *Uterus* gives no Uneasiness; the introducing the Hand, indeed, some Time after the Birth of the Child, may occasion Pain; but then that immediate Pain often may prevent much worse. There is also another Advantage by this Practice, for we can put the *Uterus* in its proper Place; and the whole Operation shall not exceed a Minute or two at the most.

§ 167. A Descent of the Womb is a Complaint too frequent, and sometimes a *Prolapsus* happens, § 72. which first Misfortune will befall Virgins as well as married Women; but an *Inversio*, or rather *Eversion*, never happens but just after Delivery. In a Descent, § 73. the Symptoms generally are Pains in the Back, Loins, and Womb attended sometimes with a Suppression of Urine. Towards relieving these Complaints, some People bleed the Patient, give Astringents inwardly, and apply strengthening Plaisters

Plaisters outwardly to the *Ligamenta Rotunda*, and sometimes Use Fomentations with internal Medicines: But the Womb ought to be first reduced to its proper Place, and there be kept by a Pessary, after which, Internals may give some Relief: But no Benefit can be expected from Plaisters applied either to the Back or Groin, for, were the *Ligamenta Lata* of any Use to suspend the Womb, § 12. the Effect of these Plaisters could never reach them: And I proved, § 14. that the *Ligamenta Rotunda*, as they are commonly called, cannot suspend the Womb, so that, could Plaisters any way affect them, they could not yet answer the End proposed, § 73. (After the Womb has been reduced, and a Pessary is fixed, it may be proper for the Patient to keep herself as much at Rest as possible, and never lift any Weights, or lace her Stays too tight. I must give a Caution, that where-ever a Woman has been subject to a Descent of the Womb, she ought always to be delivered lying down, § 42. In an *Inversio Uteri*, the Womb must be reduced, and then near the same Method must be followed. § 128. In Time of Pregnancy, the Milk in the Breasts of most Women begins to make its Appearance, though in others not till the Child is brought forth, as I have sometimes met with, particularly one as follows, the Breast of which must be frequently

OBSERVATION XXIX.

In 1745, I was consulted by a Lady, who had had Children before, but not having been pregnant for some Years, was dubious whether she was so at that Time, although she had the usual Reasons to believe it, excepting that she had never felt the Child stir, nor had any Milk in her Breasts. She continued in this Way, and grew bigger, till within a few Days of her being brought to Bed; when she thought the Child stirred, but was not very certain of it. However, she in less than a Week fell into Labour (when I attended her) and brought forth a fine, lovely Child; but yet had not the usual Hardness or Fullness in her Breasts, which did not begin to increase till three Days after her Lying-in, and then the Milk began to flow. She was a Person of a tender Constitution, of a bad Appetite, and something inclinable to Hysterical Complaints.

As the Womb in the pregnant State, has a greater Share of Blood than in the non-pregnant State, and not having any Discharge, the Epigastrics must receive a great Share of the interrupted Blood; which must happen upon the Contraction of the Womb, (viz.) when upon any extraordinary Quantity of that Fluid must be sent to the Breasts, which frequently

frequently at first occasions slight Pains there, that sometimes extend to the Arm-pits: For now, not only the whole Blood of the inferior Branch of the Mammaries is turned in upon them, but also a great Part of the Epigastric Blood from the overflowing Mlacs, whence the Breasts are so distended, as to raise some Degree of a Fever, till they are drawn or sucked; which gives the crowded Liquors Vent at the Nipples: This Fever sometimes happens on the second, third, or fourth Day, and is commonly called the Milk-Fever, but goes off in three or four Days after, chiefly by Sweat; during which Time, great Care should be taken to avoid Catching Cold; lest that Fever, in itself pretty safe, should be changed into one much more dangerous. Hence we see, that some Women, not having more Blood to spare, during Pregnancy, than to supply the Womb, have no Milk in their Breasts, as in the last *Observation*. Hence also it appears, why, in the first two or three Months of that State, the Breasts will fill a great deal, and then decrease again, the nearer the Time of Delivery approaches. For then the Child consumes, or takes in, more Fluids than in its earlier State. Proper Care, therefore, must be taken to distinguish betwixt this Decrease of Milk in the Breasts, from this Cause, and that when the Child dies in the Womb, § 137. Whence

Whence we see the Reason why pregnant Women, who have a greater Flow of Milk in the Breasts than usual, generally have a feeble Child; and why, where there is a stronger Child than usual, there is less Milk before Delivery, § 24. to 32. and also why the Breasts and Belly grow flaccid, when the Child dies in the Womb.

§ 169. Thus we see, § 168. how, upon the Contraction of the Womb, the Way from it, by the Epigastrics to the Breasts, must be enlarged; and at the same Time, that the Resistance of the Liquors at the Breast is in a great Measure destroyed by Suction: Upon both which Accounts, the Vessels of the Breasts get from all Quarters a much larger Share of Blood than ordinary, and particularly from the Epigastrics, which are by this Means kept from recovering their wonted Straitness; so that the Liquors continue the whole Time of the Sucking to have an easier Access, and an easier Exit at the Breasts, which all that Time must make a greater Demand on the Iliacs than otherwise, and in such Proportion defraud the Hypogastrics, the neighbouring Branches to the Epigastrics: whence the Veins at the Womb are now able to return all the Blood that is brought in by the Arteries, without allowing any of it to pass to the Sinuses, § 8, 9. Hence we find that, upon the Secretion of Milk in the Breasts, the *Menses* should

should be stopped, ~~as it is said~~. And also what Analogy there is betwixt the Means by which the *Menses* and the Secretion of the Milk is procured. Hence we also see the Reason why, the quicker the Milk flows after Delivery, the sooner the After-Pains abate and go off; as LA MOTTE (v) and others have observed: Whence we are taught one Means of abating the After-Pains, § 165, 172.

There are indeed some Cases, that, however severely a Woman may be sucked, the *Menses* will break out; but it must be observed, that this generally happens in those who have very little Breasts, and commonly in their first Lying-in, when the Breasts are not yet fully broke, or accustomed to distend, in which Case, Fomenting the Breasts frequently, and Keeping them warm will enlarge them; sometimes these may appear from the particular Make of the Vessels, § 171.

§ 170. From what has been said, § 4, 8, 11, 12, 168, 169. we may have a pretty clear Idea, in what Case a Woman may happen to be without any monthly Discharge, and yet be free from all Manner of Impediments. If naturally she has the Spermatic or Hypogastric Arteries much less than they are in other People, while

(2) Accouchm. cap. 35.

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the other Arteries are in due Proportion; nor if any of the neighbouring Vessels should happen to be extraordinarily big, without these being any way altered. In both which Cases, it will be the same as if there was a perpetual Diminution of the Iliac Blood, as in the Muscles, in which the Blood does not reach the Sinuses of the *Uterus*, the Veins being sufficient in them to carry back all the Blood that is brought in by the Arteries.

Hence we may see, why some Persons, who before they became pregnant had but few *Menses*, (and those, perhaps, very irregularly too) yet after Labour become regular, both as to the Time of their Eruption and Quantity; which is evidently owing to these Vessels being enlarged during Pregnancy. Hence also we can account, why some People, for a few Months after Labour, have a greater Quantity of the *Menses*, because those Vessels have not then contracted themselves so strait as they were before Pregnancy.

§ 171. From this Doctrine, § 168, 169, 170. of the mutual Dependence of the *Milk* and *Menses* upon each other's Suppression, it may be objected, That it is not possible to can never find the *Milk* and *Menses* in the same Place at the same Time, which is in some times found. But it may be answered, That it is only the extraordinary Share that the Epigastric Arteries carry from the Iliacs, that

can influence the *Menses*; and therefore, if the Blood returns again, the *Menses* must return with it, as usual; and if, in the mean Time, the Sucking be continued at the Breasts, it must draw a greater Quantity from thence, than it could do before the Vessels there were distended or overstretch- ed; and so may keep up the Secretion, tho' in less Quantity, than when the Epigastric Artery encouraged it: Wherefore there is no Wonder, that the Milk should have different Qualities from what it had when separated from a greater Plenty of Blood. Whence it is evident, that it is not the Quantity of the Mass, but the Way and Manner in which it is shared, that influences the Womb; and that it is not the Loss of any Number of Ounces of Blood, which a Nurse may undergo once a Month, when she menstruates, which spoils the Milk; but the Alteration of the constant Bent and Course of the Blood from the Breasts to the Womb, together with the Disorders that attend it. Hence we may rationally conclude, that a Nurse, who has such a Redundancy of superfluous Liquors, will have her Milk changed to the worse: And from what all Practitioners in Physic have observed of the Effects of deriving a more than ordinary Quantity of our Juices to one Part, in order to make a Revulsion from another, we have Reason to think that
a Nurse,

a Nurse, whose *Menses* are brought on by any other Cause than a Superfluity of Liquors, will come, not only to have less, but worse Milk after such an Evacuation; and therefore a Nurse who menstruates ought not to be chosen. But if particular Circumstances oblige us to continue a Child with such a Nurse, we ought to consider the Cause which occasions the *Menses* to flow; and according to these, we are to order the Child to be kept from the Breast, in the first Supposition; or for some Time after it, when it has been brought on by any other Cause: For the same Reason, the Milk in pregnant Women is bad.

§ 172. From what has been said, § 168, 169, 171. we are naturally led to the Method either to encourage the Secretion of the Milk, or to dispel it: The first, by Warmth and Suction, § 168, 169. the last, by applying Astringents or Discrements, and at the same Time promoting the Uterine Discharges, with as much Safety as can be. In using Astringents, the Patient should be very cautious, because they too frequently occasion Tumors and Abscesses, by coagulating the Milk when too freely or improperly used; which it is most liable to do at this Time, because all the very Chyle is acescent, and of Course the Milk must partake of that, wherefore the Diet and Medicines ought to be of the Antacid Class,

and Discutient Cataplasms or Plaisters should be applied outwardly. (hard work hard)

§ 173. The Milk should be of a thickish Consistence, not over-woleyish or watery, but capable of remaining upon the Hand, without running off upon a small Inclination thereof. The Nurse should milk a little of it into her Hand, Mor upon a Plate, and then, upon inclining of it, if the Milk runs immediately off upon a small Inclination, it is a sign of its being too thin: But if it remains fixed, or runs off with Difficulty, upon a great Inclination, it is a Mark of its being too thick. The best is that which slides off gently, in Proportion to the Turning of the Hand, leaving the Place where it passed a little stained.

The Colour should be whitish, but of so peculiar a Colour, as not easily to be expressed, but the whiter the better. If it be too ferous, it is then bluish, and is apt to purge the Child; which is the Case with those who lie-in, &c. If it be yellowish, it shews it to be too thick, its too long Delay in the Breasts, or a Mixture of the Bile, in those particularly who are subject to the Jaundice.

Its Taste should be sweetish, without any Acrimony: That which soon turns sour, is thin, or smells or tastes strong, either immediately, or soon after it is drawn out of the

the Breasts (which is often the Case with those who work hard) is bad.

If the Child does not suck all the Milk, it ought not to remain in the Breasts, lest it should turn sour, curdle, and inflame the Breast, which will render it bad both for Nurse and Child.

Some judge of the Milk from the Appearance of the Child; for when the Urine is insipid, or sweet and pure, they think the Milk good: But if it be strong or foetid, or such as stains the Child's Linnen with a brownish Line betwixt the dry and wet Part thereof, it then shews the Milk is acrimonious: The same is the Case if the Posteriors of the Child be excoriated, or if its *Fæces* be hard and greenish; but the Child may have these Symptoms, and yet the Milk may be good. From these Things, we may soon know what Diet is proper for a Nurse, who should always avoid all violent Motions both of Body and Mind, to prevent the Milk from being over-heated.

§ 174. A Nurse should be betwixt the Age of Twenty and Thirty-five or Forty Years at most; should not have the *Menstrua*,

§ 172. or *Fluor Albus*; should be of a healthy Complexion, not pale and wan, of a firm, not loose and flabby Flesh, of a cheerful, easy Temper, and lively, free from all Distempers, and all Sorts of Pains, Defluxions, sore Eyes, or the like. She

should be clean and neat; have a sweet Breath and sound Teeth. She should have a clear distinct Voice, and free from all Kinds of Impediment of Speech: Her Breasts should be large enough for a sufficient Quantity of Milk, but not to Excess. § 173. they should be equal, full, soft, and free from Lumps, or any particular Hardness, or Scars, yet firm and plump; and she should be full-chested. The Nipples should be rather long and slender, of a moderate Size and Firmness; should have many distinct Perforations; not chopped or cleft at the Basis; and the Milk should easily flow out, by a gentle Pressure, and spout out in several Streams.

§ 175. Fissures happen in the Nipples, *First*, When the Breasts yield little or no Milk, either by the Narrowness of the Orifices of the Vessels, or when the Quantity of the Milk is very little; in both which Cases, the Infant pulls and distends the Nipple so violently as to cause these Fissures.

Secondly, If the Infant's *Saliva* be very acrid, it corrodes the Nipple.

Thirdly, *Aphthae*, or Venereal Ulcers in the Child's Mouth may occasion the same Complaint.

The Nipples that ulcer'd grow worse by Suction, and are very often so inflam'd, and the Fissures become so large, that the Nipple will fall off.

The Method of Cure is to be attempted, *First*, by Bleeding, if the Inflammation be great; and that Breast must not be sucked: Then topical Applications must be made, composed of oily, balsamic Embrocations, Balsams, or Salves; or, as BOERHAAVE used to prescribe, by Oil or Spirit of Wine mixed with Mastich.

§ 176. Infants, when new-born, require, in general, some Relief at our Hands, for Complaints which they bring into the World with them, or with which they are soon after attacked: I shall, therefore, shew what they are, whence they arise, and how they are to be relieved; but as for such Disorders which afflict them during their Infancy, I shall not, in this Place, take any Notice of, as it does not so properly fall under the Cognizance or Direction of a Man-Midwife.

I observed before, § 35. that a viscous Substance is found in the Stomach and small Guts of new-born Infants, which becomes thicker and darker-coloured as it descends into the great Guts, and is then called *Meconium*; which is no other than the grosser Parts of the Liquors secreted in the Alimentary Tube, and of the Bile and Pancreatic Juice. These Humours being so thick or viscid, while all the Digestive Powers of a Child are very weak at Birth, may be of

bad Consequence, by sticking to the Guts, obstructing the Lacteals, &c. Hence we see, how kind Providence has been in providing such a thin, diluent, purgative Milk at this Time, for preventing these Disorders; and we may hence learn, how necessary it is to cleanse the *Prima Viæ* of new-born Infants by proper Medicines, especially when they are not suckled by their Mothers, and have not a Nurse whose Child is as young as themselves. But I should always prefer the Medical to the Mother's Milk, for the Reasons given in § 169, 170, 171, 172.

§ 177. The Want of Respiration to squeeze forward the Bile, and the Resistance made to its Entry into the Guts of *Fætuses*, by the tough Slime, § 35, 176, which lines the Intestinal Tube, make the Effusion of their Bile very slow; and therefore their Gall-bladder is generally full of a green Bile. Hence, at Birth, or soon after, Children are often observed to have the Jaundice, the thick Slime producing the same Effects in them, as if Stones, or the Gravel, obstructed the Neck of the Gall-bladder. This Jaundice generally yields to any gentle Purgative, and very often is carried away by any Medicine that increases the Contraction of the Guts; which is no more than might be expected from understanding the Cause of the Disease.

Disease. It is also from this Collection of Bile during Gestation, that Children are so frequently subject to Gripes and green Purgings soon after Birth, which cleanse their Guts of the unnecessary Slime and *Mecanium*, and discharges that sharp Bile, which might bring on Disorders of worse Consequence, if it continued to lodge there: So that, however troublesome Purgings may be to the Infants, they are generally the better for it afterwards.

§ 178. From the Care bountiful Providence is at, not only to supply a sufficient Quantity of nourishing Juices to the *Fœtales* of Animals, but also to furnish Substances prepared by the Mother's Organs for serving them after they are separated from her, *viz.* Milk in Viviparous, and the Yolk in Oviparous Animals: And from what we observe of Brutes, which follow the Dictates of Nature more closely than Man does, how they only gradually come to use the common Food of their Parents, we may be convinced, that the Food provided by Nature, Milk, is the most proper for Infants, because that a sudden Change of Food is dangerous to such Infants: and that, therefore, the Food given to Children, when they are weaned from the Breast, should be such as is nearest to Milk, and the Breast should be taken only by Degrees from them.

§ 179. Two or three Days after Tying the Navel-string of new-born Infants, their Breasts are frequently apt to swell with a thin Milk, which is easily accounted for, when we consider the Rise of the Umbilical Arteries, § 19. which is either from the Hypogastrics, or from the Extremity of the *Aorta*; so that they lie very near the Epigastrics, and consequently, when they are destroyed suddenly, as happens at the Birth, the neighbouring Vessels must receive a greater Quantity of Blood, having the Addition of what used to pass thro' the Umbilical Vessels, and so, with the rest, the Epigastrics will be affected, and consequently the Mammary Arteries will be filled, § 168, 169. and thereby that Secretion of Milk will take Place about the third Day; but after this, the Secretion not being favoured by draining off the Milk, by Suction, the extraordinary Supplies of the Mammaries bestow themselves elsewhere, and so this Secretion appears no more, as in Nurses, after the Child is weaned, § 169.

For the same Reason, Virgins, from a sudden Suppression of the *Menses*, have sometimes a Serum in their Breasts, but never pure Milk,

For the same Reason, Virgins, from a sudden Suppression of the *Menses*, have sometimes a Serum in their Breasts, but never pure Milk, **OBSER.**

OBSERVATION XXX.

§ 180. The Wife of one Chapman of Selby (fourteen measured Miles from York) lay in of her last Child about 1742; soon after which, she had (what she called) the *Fluor Albus*, that had continued from that Time, and increased upon her, insomuch that, she says, she had sometimes such a Discharge, as to wet the Place she sat upon, quite through all her Petticoats, &c. For some Months before we were concerned for her, she began to complain of a Pain and Weight in the Uterus, which increased as the Substance grew in Bulk; and at last the Excreescence was so large as to appear outwards, and then it grew very fast. The Patient consulted her Midwife, who thought the Womb had come out; but she was so prudent as not to do any thing, and desired the Husband would call in better Advice. Accordingly, Mr. FELL, an eminent Man-Midwife and Surgeon in York, was sent for, but, not having met with a Case like this, desired me also to attend the Patient, which was in December, 1749. When I examin'd her, I found the Substance not only filled, but also very much extended, the Entrance into the *Vagina*: I introduced a Finger into the Passage, and soon found the Excreescence to be less in Bulk there, than the Part which appeared

appeared outwardly, and was, in Shape, as may be seen in *Tab. XVII. Fig. 4.* I followed the Substance with the End of my Finger till I reached the *Os Tinctæ*; which I found chiefly filled up with the Neck or smallest Part of this Substance, leaving only a little Part of the *Os Uteri* to be perceived on the left Side obliquely backwards. I tried to penetrate the *Os Tinctæ* (as it seemed not to be very close at first) but could not; however, I so far opened it as to let out a sort of bloody *Ichor*, that was a little offensive in Smell; which induced me to ask her, If, when her Discharges were so great as to wet her Seat, they differed in Smell from those which came in less Quantity; and if the Smell was any thing like what then came from her, when I searched her? She answered in the Affirmative. Whence I concluded she had an Ulcer just within the *Os Uteri*, from the Edge of which this *Pungus* or Excrecence grew. The Patient complained of a Pain in the *Uterus* and Back; was very faint, and frequently was provoked to vomit; had a feeble Pulse, and sometimes sweat. Upon Consultation, we thought proper to tie a Ligature as high up within the *Vagina* as the Surgeon could reach; which being done, and some internal Medicines being ordered (chiefly of the *Cortex Peru*) we returned home; and in two or three Days we went again, and found

no great Alteration, as to the Uterine Complaint, except that the Part below the Ligature was somewhat more livid, and the foetid Smell was much stronger, and not unlike that of a confirmed running Cancer; and as the Matter was somewhat confined in the Passage, I ordered an Injection, composed of the Emollient Decoction, with *Mel Rosarum & Tinct. Myrrhae*; this was frequently used, by which the Smell became less offensive, and in two Days after this Visit, the Excrescence dropped off at the Ligature, without any Evacuation of Blood or other Humours. The Excrescence was very solid, of a dark Liver-colour, and whilst adhering to the Uterus, was quite insensible; when cut into, it resembled the solid Substance that is taken out of Cancers: It weighed several Ounces, and was in Circumference above eight Inches. About six Months after this, being in the same Town, I called to see the Patient, who was so well recovered, that she had no Pains either in the Uterus or Back; her *Fluor Albus* was little or nothing, and she had recovered so well as to have her *Menstrues* regularly, which she had not had for some Years before. Might not this Disorder be brought on her by having Part of the Os Uteri torn in the last Lying-in?

OBSERVATION XXXI.

§ 181. In 1741 and 1748, I was concerned for two different Persons (one in each of those Years) whose Symptoms or Complaints being nearly allied (the one only being in the fifth, the other in the seventh Month of Pregnancy, as they both imagined) I shall describe their Cases as one.

Each of these Persons imagined they were pregnant, having had a Suppression of the *Menfes*, with the Symptoms which generally attend a pregnant State, excepting that, from the latter End of the Terms above, they began to have a Discharge of Blood, and could not say they had felt the Child move: This Discharge kept going on (sometimes increasing, at other Times decreasing) for about three Weeks; when it increased so much in one of them, who at the same Time parted with some little Water and Pieces of Skins; that I was sent for; I examined, and finding the *O: Tince* would admit two Fingers, I introduced them, and brought away what I could lay hold of within the Womb, which proved to be some little oblong Bags full of clear Water; a few of these hung together in a Cluster, and there were several Clusters; I then repeated the Operation, and brought away

away as many as would fill a Pint-mug; and then the Flooding ceased, and the Patient recovered very well, after parting with a few more that I could not reach. The other Patient, after having a Discharge as before-mentioned, fell into a seeming Labour, and had her Pains regularly, attended with an Increase of the Loss of Blood; upon which, I was sent for; at my Arrival, I found the Os Uteri open sufficiently to admit three Fingers, but very high up; however, after some Pains, I introduced my Hand, and brought forth several *Hydatides* (many of them an Inch long) all hanging to one String or Stalk; I introduced my Hand again, and brought the Remainder away, all which had only one Stalk: The Patient recovered very well.

The End of the Fourth Book.

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POSTSCRIPT.

§ 1. SINCE my Copy went to the Press, I have perused MONRO's new Edition of his *Anatomy of the Human Bones* (presented to me by its excellent Author) and finding that he gives us the Difference betwixt a Male and Female Skeleton, I thought proper to add a Part of it here, as an *Appendix* to § 1. and 2.

The *Os Sacrum* of the Female is broader, and turned more outwards, for enlarging the *Pelvis*.

The *Os Coccygis* is more moveable, and less bended forwards, to facilitate the Birth.

The *Ossa Ilium* are more hollow, and more reflected outwards, and consequently further removed from each other, in order to widen the lower Part of their *Abdomen*, and for the better Support of the impregnated *Uterus*.

The Ridge, on the upper Part of the *Os Pubis*, is larger, in such Women as have born Children, being extended by the strong Action of the *Musculi Recti Abdominis*.

The

The Cartilage between the two *Ossa Pubis* is thicker, by which the *Pelvis* is more capacious.

The conjoined Surfaces of the *Ossa Pubis*, and of the *Ossa Innominata* and *Sacrum* are less, that with the straighter *Os Sacrum* a larger Passage might be left for the Exclusion of the Child in Birth.

The great Tuberosity of the *Ossa Ischium* is flatter in Women than in Men, because it is more pressed upon, in the sedentary Life which Females enjoy.

In Consequence of the *Pelvis* of Women being wider, the Articulations of their Thigh-bones must be farther removed from each other; and therefore a larger Space is left for the Procreation and Birth of Children, ALBIN. *de Ossib.* § 339. Which Distance of the Thighs may be one Reason why Women, in Running, generally shuffle more from one Side to the other, than Men, to preserve the Center of Gravity of their Bodies from falling too far to a Side of the Joint of the Thigh that supports them when the other is raised, which would endanger their Tumbling to the Ground. The *Pelvis*, then, has a large Opening above, where it is continued with the Abdomen, and appears with a wide Opening below, in the Skeleton; but in a recent Subject, a considerable Part of the Opening is filled by the *Sacro-sciatic Ligaments*, *Quadrigemi* and

Coccygæi Muscles, which support and protect the contained Parts, better than Bones could have done (a).

§ 2. The better to prove, that the *Os Coccygis* cannot be made to recede so far back, as to give such Benefit in Delivery as some would insinuate, I thought proper to add the following Account of its Connection to other Parts, from sufficient Authority, as a Supplement to § 3.

CHESELDEN, in his *Anatomy*, says, 'The *Coccygæi* arise from the acute Processes of the *Os Ischii*, Tab. I. Fig. 2. Let. b. Tab. II. Fig. 1. Let. b; and are inserted into the *Os Coccygis*, Tab. I. Fig. 2. Let. b. Tab. II. Fig. 1. Let. b; which they pull forward.'

WINSLOW says, 'The *Coccygæus Anterior*, *five Ischio-Coccygæus*, is fixed by a broad Insertion in the anterior Portion of the small Transverse Ligament, at the upper Part of the *Foramen Ovale* of the *Os Innomminatum*, Tab. I. Fig. 2. Let. m. Tab. II. Fig. 1. Let. m. From thence it runs between this great Ligament and the *Musculus Obturator Internus*, with which it is often confounded by Anatomists, and contracting in Breadth, it is inserted in the

(a) *Monro's Osteolog.* p. 223.

‘ lower Part of the *Os Coccygis*,’ *Tab. I. Fig. 2. Let. b. Tab. II. Fig. 1. Let. b.*

‘ The *Coccygæus Posterior*, five *Sacro-Coccygæus*, is fixed to the inner or concave Edge of the two first *Vertebræ* of the *Os Sacrum*, *Tab. II. Fig. 1. Let. a a*; to the inner and lower Edge of the *Ligamentum Sacro-Sciaticum*, and to the Spine of the *Os Ischiûm*, *Tab. II. Fig. 1. Let. e*. From thence, contracting in Breadth, it is inserted in the Inside of the *Os Coccygis*, above the former Muscle,’ *Tab. II. Fig. 1. Let. b.*

ALBINUS, in *Tab. XII. Of the Muscles*, shews four Cuts of the *Levator Ani*, which, he says, ‘ has its Origin partly from the interior Part of the *Os Pubis*, *Tab. II. Fig. 1. Let. k, l*; and partly from the acute Process of the *Os Ischii*, *Tab. II. Fig. 1. Let. b*; and is inserted into the Fore-Margin of the last and last Bone but one of the *Os Coccygis*,’ *Tab. II. Fig. 1. Let. b.*

Betwixt the acute Process of the *Os Ischiûm*, *Tab. I. Fig. 2. Let. b. Tab. II. Fig. 1. Let. b.* and the *Os Coccygis*, *Tab. I. Fig. 2. Let. b. Tab. II. Fig. 1. Let. b.* is only about two Inches Distance, or a little more, in most People.

From this Account, the Anatomical Reader will conclude, that all the above-named Muscles, especially those Parts of them which arise from the acute Processes of the *Os Ischium*) can never bear to be distended full half of their whole Length, if not more, without being torn asunder; which must inevitably be the Case, should the *Os Coccygis* be forced so far backwards, as to be of such Benefit as some People would endeavour to make us believe. But that it can never answer the End proposed, without doing an irreparable Injury to the Patient, I will now demonstrate.

Suppose, for Instance, that the Distance betwixt the *Pubis* and End of the *Os Coccygis* be three Inches and a half; and that the Diameter of the Head, which should pass betwixt those Parts, be four Inches; the Head, then (supposing neither Part to yield) must of Course stick there. The Method proposed by some is, to introduce a Finger or Thumb into the *Anus* or *Vagina*, and press against the *Os Coccygis*, to force it so much backwards as to widen the Passage. Others recommend to introduce a Hand into the *Vagina*, with the Palm upwards, so that when the Pains come on, the *Pelvis* is to be enlarged, by forcibly thrusting back the *Coccyx* with the Back of the Hand, and at the same Time drawing the Hand gently down.

It is to be observed, that when the Pains were off, the Finger may be drawn out.

It is evident, in both these Cases, that either the Thickness of the Finger, Thumb, or whole Hand, must add considerably to the Bulk of the Child's Head, or, in other Words, must straiten the Passage very much; suppose, for Instance, only one Inch; the *Os Coccygis* must be forced to yield one Inch and a half backwards, or the doing it (supposing the Head not to yield) will not in the least hasten the Delivery; and it is as evident, from the above Anatomical Description, that the Parts cannot yield so much, without being torn to Pieces; which will be attended with very bad Consequences, that never can be repaired again.

I am thoroughly convinced, from repeated Experience, that where-ever the Head is supposed to be hindered from advancing by the *Os Coccygis* (where the Woman is naturally made, and the Child's Head is of the usual Size, and the Womb is properly placed) the Child then, generally, either sticks by the Shoulders, or with its Head against the *Perinaeum*; which last chiefly happens to Women whose Entrance into the *Vagina* is very strait, especially of their first Child. For I have been called in to assist People in Labour, when I was told that the Child's Head stuck against the *Os Coccygis*; but I found, upon searching, that I could pass my Finger quite round the Head, when the Pains were off, § 46. and

was soon convinced that the Child stuck by the Shoulders, the *Os Uteri* having contracted a little after the Head had passed it; where if the Child stick, the Method recommended in § 102. is to be followed.

At other Times, I have been sent for to Women of different Ages, at their first Lying-in, whose Entrance into the *Vagina* was very strait, the Back-part whereof, towards the *Perinaeum*, has been very strong, especially in Women advanced in Years; and I must observe, that the straiter the Entrance is, the more must the Back-part approach towards the *Os Pubis*, which may be called a *fixed Point*: Wherefore, in this Case, when the Child's Head advances, the Pains must force the Fore-part thereof (in a natural Posture) against the *Perinaeum*; which deceives some People so much, that they imagine the Obstruction is caused by the *Os Coccygis*, which they think will yield to the Pressure. In this Opinion they seem confirmed, because by introducing a Finger, &c. and forcibly pressing backwards, they find the Part to yield; which, in Reality, is only the Part mentioned above, and not the *Coccyx*; although it may require a great Force to do it. This Method of introducing a Finger, &c. to be in the Passage, as above, at the same Time with the Child's Head, is quite wrong, for the Reasons already assigned: For the Operator,

tor, instead of introducing a Thumb, &c. had better follow the Method directed in § 48. by which that Part of the Entrance into the *Vagina* may, by spreading the Fingers, and gently thrusting obliquely backwards against it, when the Pains are on, and slipping that Part over the *Os Frontis* of the Child, the Head will easily advance; and the Operator must then do as in § 48. By this Means, the Passage is no more extended than the absolute Bulk of the Child may require; whence, of Course, there is less Danger of tearing the *Perinæum*; and if the Part should suffer, it will be less than if the Finger, Thumb, or Hand had been within the Passage at the same Time with the Child.

§ 3. In § 51, 71, 101. I omitted to take Notice, That whenever the *Os Pubis* and *Os Sacrum* are so near, or that the Child's Head is too large, and becomes squeezed betwixt those Bones, after the Discharge of the Waters; the Operator then touching the *Apex*, instead of perceiving the Bones of the *Cranium*, will find the outward Integuments thereof puffed up, like a Bladder filled with Air; which is occasioned by the Bones lapping one over the other, whereby the Integuments become much larger than the Head in that Condition, and form that seeming Bag. Whenever this is found, it

is a certain Sign that the Head is much squeezed, either by its being too large, or (what is the same Thing) by the *Pelvis* being too strait; and a tedious Labour is likely to ensue. Before any Operator attempts to use Instruments in this Case, I would advise him to turn the Chin towards one of the Shoulders (as is directed in § 51. *Obs. IX.*) till the Head can be got into the *Pelvis*, if possible; and then replace the *Apex* in the Center again.

§ 4. It may be remembered, § 45, 71. That I mentioned the Loss of the Waters to be one Cause of difficult Labour; and having, since the Copy went from me, met with a Case, which will help to illustrate what I have there said, I chuse to mention it here.

OBSERVATION XXXII.

In *April 1750*, the Wife of a Tradesman of this City (*York*) about Twenty Years of Age, began to be much out of Order, but in particular was frequently afflicted with violent Vomittings, especially soon after her regular Meals, if she eat plentifully, or after long Fasting; which of Course was in a Morning, when she was wont to be very faint, § 62. Wherefore she always took something (such as Gruel, Broth, or the like)

like) about Four o'Clock in the Morning, and then she was easy again for a Time. Her *Menses* had stopped, and she complain'd of a Sensation of Swelling or Stuffing in her Stomach and Bowels; yet the Abdomen was not in the least perceptibly distended, even after she had endured these Complaints for above five Months. At these Times the *Menses* should have appeared she was much worse, and for a Day or two she thought the Abdomen swelled a little, but decreased again soon after: Which induced her to apply to an eminent Physician for Relief; who, from the Duration of her Complaints, and no apparent Increase of the Bulk of the Abdomen, concluded the Cause of her Illness to be a *Chlorosis*, as no other Symptoms of Pregnancy appeared; and accordingly, in the second Week of *September*, prescribed some Pills, composed of *Aff. Fœtid. Spec. Aromat.* and *Pilul. Ruffi*, to be washed down by a Stomachic Mixture. These Medicines soon brought on a Looseness, that continued for three Weeks, viz. till *October* the 2d; which abraded even the very *Mucus* of the Bowels, and was at last stopped by a Cardiac Mixture, prescribed by the same Physician; yet nevertheless the Looseness frequently returned (but not so violent as before) till near the ninth Month. After the first Stopping of the violent Purging, her *Menses* appeared (which was about

about the End of the sixth, or Beginning of the seventh Month) but not in very great Quantity. About a Month after, they appeared again, although fewer than usual. In her ninth Month of Pregnancy, she applied to me, without acquainting me that she had been under the Care of another Physician before, which I knew nothing of till she was delivered. At this Time she complained of frequent Vomitings, although not so violent as before; of a Swelling of her Abdomen, insomuch that she was obliged to loosen her Stays for about an Inch, and sometimes more, but in a Day or two she could lace her Stays almost close again, without any Inconvenience. Thus the Abdomen varied frequently, till she had taken the Medicines I prescribed for her (which were of the warmer Class of palatable Stomachics) when her former Complaints began to abate.

I ordered her, once a Week, to measure her Belly with a String in a Morning, before she dressed herself, in order to know whether, and in what Proportion, the Abdomen increased. By following this Method I had prescribed, her Complaints daily abated, except that her Belly was greatly increased in Bulk; for the End of the String, which the Week before would meet around her, would not now meet by a Nail of a Yard; whereupon I again examined her Breasts,

Breasts, but found them without the least Appearance of Milky being quite smooth and soft: And she denied ever to have felt any Motion within her Abdomen, excepting that, since she began to be better of her Complaints, she had perceived Wind to roll about sometimes; but upon parting with Wind, the Motion ceased.

When she wanted about a Week of the Time in which the *Menses* should again appear, if regular, I ordered her to let me know immediately, whenever she should find the least Alteration, whether from an Eruption of the *Menses*, or from any other Complaint: Accordingly, in the Evening of the Twenty-ninth of *December* 1750, I was sent for, and found my Patient walking about the Room, without any Complaints; having parted with about a Pint of Water from her Womb (Part of which she saved in a Glass, and was without any Smell, or Mixture of Blood, but there seemed to be a small Quantity of a whitish *Mucus* in it) I ordered nothing for her, except a little *Dia-codium* in some simple Water, desiring her not to stir too much, lest she should bring on a Flooding, as she was likely to miscarry; she went to Bed, and I left her about Nine o'Clock at Night; she rested very well, but felt no Motion in her Abdomen all this Time.

About

About Three or Four o' Clock in the Morning, she was awaken'd by Pains in her Back, which spread a little on both Sides, till Eight o' Clock the same Morning, when they began to be more violent, and struck down into the *Pubis*, &c. § 41. whereupon I was called in, and found her with true Labour-Pains, § 41. I touched her, and found the *Os Tincæ* extended to the Size of Half a Crown, but opening towards the *Sacrum*, the *Fundus Uteri* projecting over the *Os Pubis*, and as far as I could judge, the Child seemed to be large enough to be near the usual Time of Birth: Whereupon I ordered my Patient's Friends to get every thing necessary against her Delivery, which I told them would be soon; and accordingly, the Things were got as quick as the Surprize and Shortness of the Time would permit.

The Pains grew stronger and more regular, and the Child presented with its Breech, having its Back to the Mother's right Side; so when Nature was prepared, I placed the Child's Buttocks on one Side, and brought it away by the Feet. As soon as this healthy, though, small Child was born, I introduced my Hand, and brought away the After-birth, which was very tender, but adhered very closely to the *Fundus Uteri*. Although I introduced my Hand immediately after the Exit of the Child, yet the

Uterus

Uterus was so contracted, that I could scarce expand my Fingers. I replaced the Womb again; and both Mother and Child are very well.

I must remark, *First*, That what this Person found by Experience to give her Relief, when she was faint and vomited, confirms the Method recommended by me in § 62. which I have frequently found to answer the End proposed.

Secondly, We may hence see, how cautious People should be in either prescribing or taking Medicines which might injure a pregnant Woman; especially as this Person proved with Child; altho' there was so little Reason to think so, at the Time she applied to the Physician.

Thirdly, We see, that although she had no Eruption of the *Menses* for six Months, yet they came again without any visible Injury; as they came at the regular Time in which they should have appeared if she had not been with Child, § 137.

Fourthly, We see what a small Quantity of Waters were in the Bag, there being only about a *Winchester* Pint at the most; and yet the Child was healthy and strong, § 24.

Fifthly, and *Lastly*, I must observe, That whenever the Waters are in too small a Quantity, or that the Membranes burst before Labour begins; then the Child generally

rally presents with the Knees, Feet, or Buttocks, near the same Posture as it is in the Womb during Pregnancy, § 39. not having Room to turn when the Labour begins, § 40.

In Page 261. § 129. I said I should mention the chief of the Arguments produced by the Advocates *for* and *against* the *Cæsarean* Operation; but as I found the Arguments *against* it so weak, I thought it as well to omit them, especially as they would only have added so much to the Bulk of the Book, without the least Advantage to the Reader.

§ 5. It may be remember'd, that in § 4. and 10. I said, 'The *Vagina* and *Uterus* receiv'd their Nerves from the *Sacrum*, and also several Branches from the *Lumbares*, *Plexus Mesenterici*, and *Sympathetici Maximi*, or Greater Intercostals; whence Disorders of the Womb affect the Head and Stomach with a Vertigo, *Delirium*, Loathings, and Vomitings.' Hence also the Pains in and over the Eyes, when the Womb is affected, and in Hysterical Complaints, may be explained, from the Communication betwixt the Intercostal and Fifth and Sixth Pair of Nerves, that sends Branches to the Eye; which is confirmed by cutting the Intercostal Nerves of living Animals,

when

when the Eyes are plainly affected (b). From the Communication betwixt the Intercoitals at the *Ganglion* and the Eighth Pair of Nerves, the Sensation of a Rising in the Throat and *Thorax*, in Hysteric Disorders may be accounted for; because that Pair of Nerves sends Branches to the Tongue; *Larynx*, *Pharynx*, and *Ganglion* of the Intercoital Nerve. From the almost universal Connection and Communication which the Intercoital Nerve has with other Nerves of the Body, we may easily account, why Vomiting is a Symptom of Danger after Child-Birth, Lithotomy, and other Operations on the Parts in the *Pelvis*; why Obstructions of the *Menses* are capable of occasioning Strangulations, Belchings, Cholics, Pains in the Stomach, and even Convulsions in the Extremities; and why Irritations in the Bowels of the Belly occasion sometimes Convulsions of the Body.

§ 6. In § 101. and 102. Page 211. I shewed the Manner of using such Forceps as have hitherto been contrived, with the Advantages and Inconveniences that may attend the Use of them, both to Mother and Child, at the same Time I gave Rules how they are to be made; since which Time, I have invented a new Sort of Forceps, the

(b) *Mayro's* Account of the Nerves, in his new Edition of his *Osteology*.

Use

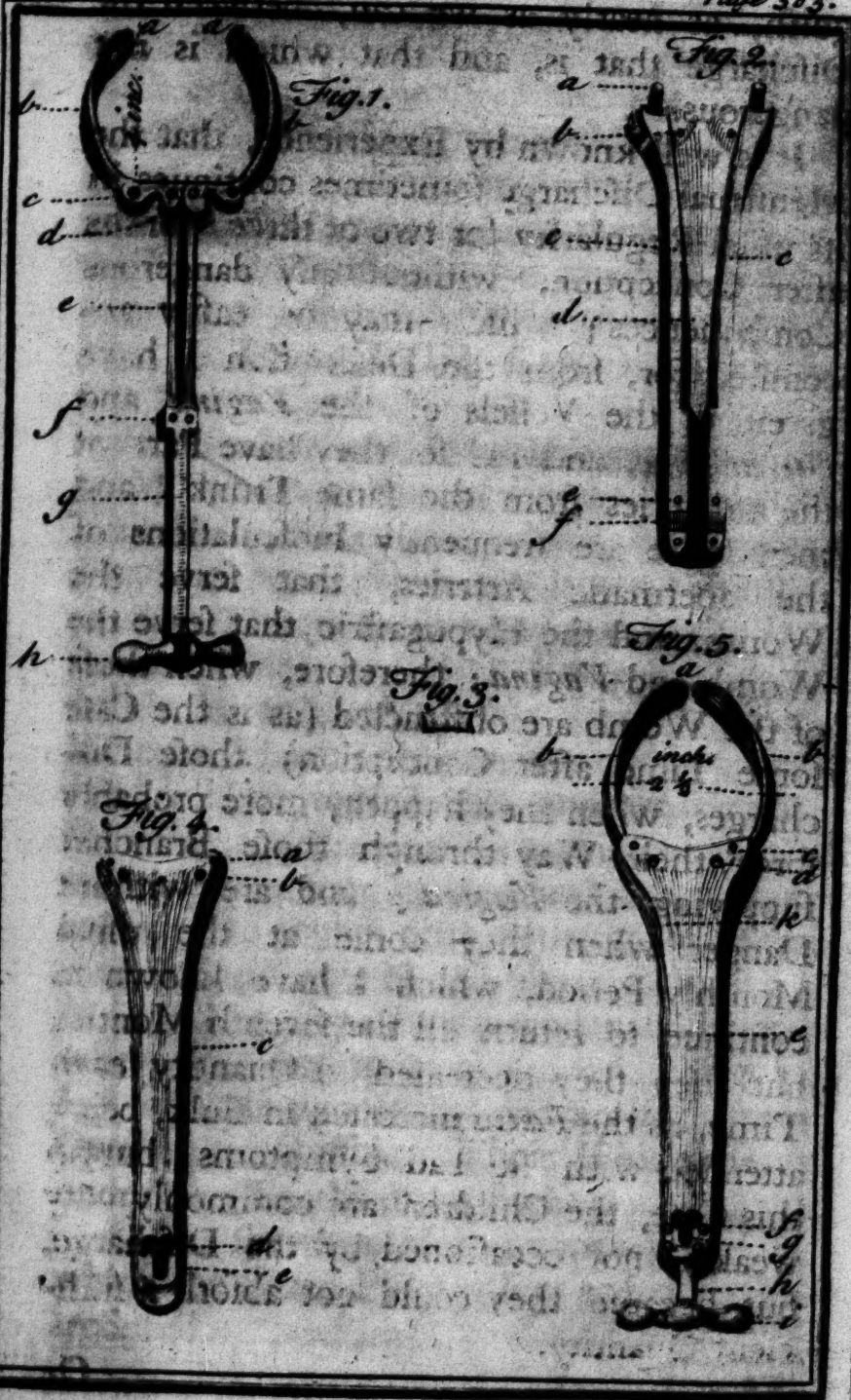
Use of which is far less prejudicial, either to the Woman or Child, and is much more commodious for the Operator. I will therefore first give a Description of the different Parts of the Instrument, with Directions how it should be made; and then shall shew the Manner of using it.

TAB. XVIII. Explained.

Fig. 1. Lett. *a, a, b, b*, represent two Stiles or Wings of a Pair of Forceps, being in Length, from *a*, to the Joint *c*, four Inches. The Ends *a, a*, when the Forceps is fully extended, are above five Inches distant; and at that Time, the widest Part, as at *b, b*, will be about five Inches and one Quarter. When *a, a*, are only extended four Inches, *b, b*, will be four Inches and six Tenths. When *a, a*, are three Inches distant, *b, b*, will be near four Inches; and when *a, a*, are but two Inches distant (the general Diameter of a Child's Neck, § 101. Page 213.) *b, b*, will be three Inches and a half; and when *a, a*, are quite close, as in *Fig. 5.* *b, b*, will be two Inches and an half, from Outside to Outside. Their Thickness is under two Tenths of an Inch. *Fig. 2.* *a* shews a Hole in each Wing, in which the Fixed-Pin, *a*, *Fig. 2.* is to be introduced.

d, shews

[The page contains extremely faint, illegible text, likely bleed-through from the reverse side. The text appears to be organized into several paragraphs.]



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d, shews the Pin that fixes the Wings to the lesser Staves, *e*; which are likewise fixed at the other End to the bigger Staff, at *f*: Both the Joints, *d* and *f*, are a little moveable. The Distance betwixt the Hole, *c*, and the Pin, *d*, in Fig. 1. is eight Tenths, and the Distance betwixt the Center of the two Holes, *c*, *c*, is one Inch and nine Tenths.

Let. *b*, is the Handle, by which the Instrument may be easily opened, or shut, by thrusting up, or pulling at it; these Staves may be about four Inches each in Length.

Fig. 2. and 3. represent two flat Plates, each about one Eighth of an Inch thick; which, with the two Sides, Fig. 2. Lett. *c*, *c*, when fixed, form a Hollow or Cavity for Fig. 1. to move in.

a, Fig. 2. shews the Pin, which goes through the Hole, *c*, Fig. 1. into the Hole, *a*, Fig. 4. and appears at *c*, Fig. 5. This Pin is fixed at one End to the Plate, Fig. 2. but is not fixed at the other End. These two Pins serve the Wings to move on.

b, shews the Holes through which the Screws are put, to fix the Plates together, at the upper End of the Instrument.

c, *c*, are two Pieces riveted on, to form the Hollow for the Staves to move in.

d, The Backside of the Plate.

C c

e, Four

e, Four Holes, for Screws to hold the Plates together, and to fix them, when the great Screw, *e*, *Fig. 4.* and *g*, *Fig. 5.* is used.

f, is a small Nich, to admit the small Plate, *Fig. 3.* which is to be forced against the Staff, *g*, *Fig. 1.* by the great Screw, *e*, *Fig. 4.* and *g*, *Fig. 5.* to hold the Wings, *a, a*, at any Distance required.

Fig. 4. represents a flat Plate, to be screw'd on to *Fig. 2.*

e, is a large Screw, which serves to fix the Wings, *Fig. a, a*, at any Distance required; and also serves the Operator to thrust his Thumb against, as he uses it; as will be shown presently.

Fig. 5. represents the whole Instrument, when ready for Use. The Breadth of the Head, from Outside to Outside of the Plate, as at *c*, *Fig. 5.* is two Inches one Quarter; at *e*, is eight Tenths of an Inch; and at *f*, is about one Inch. The Thickness of the whole Instrument is about half an Inch.

That the Instrument-Makers may know to what Degree the Wings, *a, b*, *Fig. 1.* should be bent, I here give them a general Rule to go by. Let them draw an Ellipse, whose longest Diameter must be four Inches three Quarters; then let them draw a Line cross

cross each End, where the Diameter shall just be two Inches and a half; and the two Sides of the Ellipsis, betwixt the two Cross-Lines, will be the Length of the Wings; and at the same Time shews the Degree of Curvature necessary for them to be of.

When the Wings, *a, a*, of this Forceps are to be extended without moving the Instrument itself, it is performed by putting the Fore-Finger round the great Screw, *g*, *Fig. 5.* and thrusting with the Palm, or any other Part of the Hand, against the Handle at *i*; when for every tenth Part of an Inch, that the Staff moves, the Wings, *a, a*, will be extended one Inch and a Quarter. On the other Hand, when the Wings, *a, a*, are to be brought together again, as in *Fig. 5.* then the Operator may thrust the End of his Thumb against the great Screw, *g*, *Fig. 5.* and pull the Handle, *i*, with his Fingers at the same Time; and if he would fix the Wings, *a, a*, at any certain Distance from each other, it is done by turning the great Screw, *g*, *Fig. 5.* with the Thumb of the Hand that is without the *Vagina*.

I shall now shew the Manner of using this Instrument. — Suppose, then, that a Child's Head had passed the Os *Uteri* in its natural Position, but proceeded no further, either from the Mother's Weakness, violent Flooding, or that the Head was something

too large: In this Case, I introduce a Finger or two of my left Hand into the *Vagina*; and then I take my Forceps in the right Hand, with the Wings *a, a*, quite close, as in *Fig. 5*, which End I slide along my left Hand and Fingers which are within the *Vagina*, having the great Screw, *g*, *Fig. 5*, towards my left Hand: so that one Wing will be towards the *Pubis*, and the other towards the *Perineum*: Being thus introduced flat along the Side of the Child's Head, till the End, *a*, reach the Neck or Ear, I then, with the right Hand, gently expand the Wings, *a, a*, in the Manner already described: I also slip one of the Wings, *a*, edgeways betwixt the Os *Pubis* of the Woman and Head of the Child; which is done by gently turning the Handle, *z*, with the right Hand, while the Fingers of the left Hand, which are within the *Vagina*, assist also, and place the End, *a*, of one Wing against the Neck of the Child below the Ear; when of Course the other Wing must be parallel: I then try with a Finger to prevent any thing being betwixt the Wings and Child's Head; and with my right Hand draw the Wings as near together, in the Manner above directed, till I think the Child's Head sufficiently squeezed not to injure it, which I can judge of by the Fingers which are within the *Vagina*: I then fix the great Screw, *g*, *Fig. 5*, with my

my Thumb as abovementioned; by this Means, the Head can be no more compressed, neither can the Instrument easily slip off. This being done, I withdraw the left Hand, and take hold of the Forceps about *k*, Fig. 5. and assist the right Hand in pulling out the Head, from which, when sufficiently advanced, I, with my right Thumb, loosen the Screw *g*, and take away the Forceps.

From what has been said, it is evident my Forceps are better than any yet contrived: *First*, Because the Instrument may be introduced at once, whereby the Operation will be sooner performed. *Secondly*, As the Wings from *a* to *c*, Fig. 1. and *e* are within the *Pelvis*, they can be expanded more or less without putting the Mother to any Pain. *Thirdly*, The Hand or Fingers, that are within the *Vagina*, will not only move less than when employed in fixing the other Sort of Forceps, but also will do it in less Time; both which must occasion less Uneasiness to the Woman. *Fourthly*, As the Joints of these Forceps are within the *Pelvis*, the Wings will be applied so as to fit any Child's Head; wherefore the Parts of the Woman will be less extended, than with the old Sort of Forceps. And, *Fifthly*, This Instrument is less prejudicial to the Child's Head, because the Wings can be so fixed, at any determinate Degree of Ex-

painful, as not to compress the Head more than necessary; whereas, with the other Forceps, the more you pull, the more you squeeze the Child's Head.

I now think it high Time to come to a Conclusion of this *Essay*, which has grown to a larger Size, than I, at first, intended; but I flatter myself, that the Improvements which I have made in the Method of *Practice*, for the Preservation of both Mother and Child, and the several vulgar Errors which I have refuted, will sufficiently atone for the Size of the *Book*. Although I have been as brief as I well could, yet I cannot charge myself with any material or wilful *Omissions*; neither have I been fond of obtruding any Opinions upon the World, which I have not Grounds to believe are founded upon *Truth* and *Matters of Fact*, which I have here laid before the Public; and which I am certain will prove of Advantage to Many, when more generally known and brought into Practice. I have rather studied the *Weight* of *Matter*, than *Elegance* of *Style*; and *Usefulness* rather than *Ornaments*: I have endeavoured to make my *Reasons* plain and obvious, and the *Inferences* easy and natural; yet such is the almost incredible Prepossession of any old deep-rooted Opinion, that there is such a strong vulgar Prejudice against any Positions that

that are new, that the Ignorant Many never fail to raise Clamours, when they find any Method different from what they knew before, be it ever so plain and evident, even to a Demonstration. I own, I have not completed the *Treatise* so full as it should be; but yet, I hope, it may be a Means of spurring up some abler Head to finish what I have begun; as HORACE says upon another Occasion: *Modum in laudem*

*Fungar vice Cotis, acutum
Reddere quæ Ferrum valet, exorsus sibi se-
candi.*

Art. Poet. Ver. 303

F I N I S.
I have endeavoured to make
my Reason plain and obvious, and the style
easily and natural; yet such is the al-
most incredible Reposition of a long
deep-rooted Opinion, that there is such a
strong vulgar Prejudice against any Position

I N D E X

I N D E X

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